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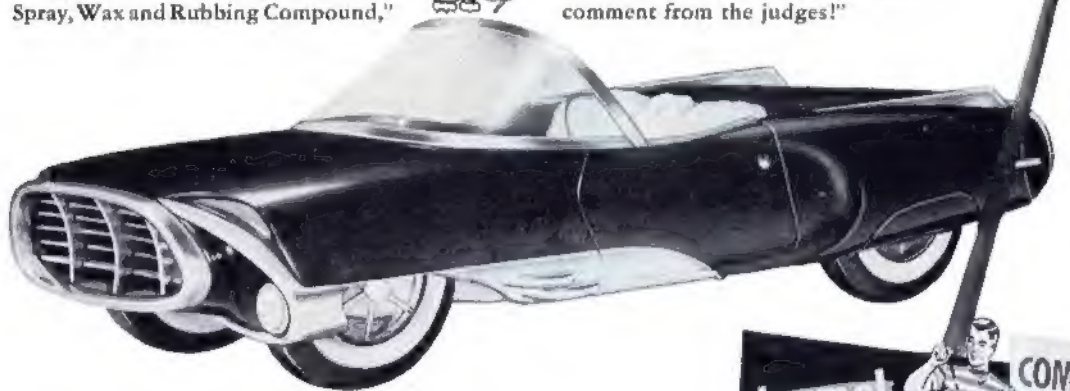
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FOR YOUNG MEN

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Art Assistant.....Henry Harson

Editorial Assistant...Marion Lynch

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As a special treat for gunsmith fans we had this cover painting executed by the noted gun artist James M. Triggs. In the painting you will find the fearsome Bowie knife (pg. 30) and Colt's "Peacemaker" (pg. 42). Both features should be especially welcomed by weapons collectors.



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WILLIAM J. LOWRY

The Story of the F.B.I. by the Editors of *Look* (E. P. Dutton and Company, Inc., 300 Fourth Avenue, New York 10, N. Y. 286 pages—\$3.95)

The introduction of this book, written by the Director of the Federal Bureau of Investigation, gives a concise history of the events leading to the establishment of this law enforcement agency. From time to time as events and needs have warranted, the activities and authority of the F.B.I. have been expanded.

The chapter on the selection and training of personnel leaves no doubt in the reader's mind as to the high caliber of men who serve in the bureau. From the time of acceptance into the organization, the G-man is constantly learning new methods in crime detection and prevention. The training of the probationary candidate is strenuous and thorough. He must familiarize himself with many pieces of laboratory apparatus as well as finger-printing and identification. The handling of firearms is of prime importance, from the .22 rifle to the fearsome Magnum .357-caliber revolver, the most powerful hand gun manufactured in this country. Hours on the electronic shooting range make for split-second accuracy in choosing which target must be fired on and which is to be spared. Additional hours in the gymnasium train the agent in the art of hand-to-hand combat. After sixteen weeks of training which includes accounting, business psychology and economics the successful candidate is ready for assignment to a field office.

The chapters with photographs of such famous cases as that of Dillinger, the Barker-Karpis gang, Velvalee Dickinson (the woman who worked as a Japanese spy during our war with that country), Kinzie Wagner the Hillbilly Killer, prove the old adage that "truth is stranger than fiction." The work of the F.B.I. in tracking down War Two German agents, both home grown and imported, as well as the saboteurs that came via enemy submarines, is exciting reading.

Electronics for Everyone by Monroe Upton (The Devon-Adair Co., 23 East 26th St., New York 10, N.Y. 370 pages—\$6.00) is a comprehensive and delightful new book telling in simple lucid detail how the great "electricians" of the past made the discoveries that have given us

condensers, coils, batteries, tubes, etc., then how later scientists developed these early discoveries and the principles laid down to give us in this modern day such electronic wonders as radio, radar, loran, TV in both color and black and white, lie detectors, electronic calculators and many other applications of electrical energy.

Toward the end of the volume the author has presented interesting chapters on radar and its function in time of war to its present state of high development as in the super radar for the Arctic radar network, Ground Controlled Approach, and many other uses in today's commerce.

In the last chapter of the book entitled "Grab Bag" a whole new range of new developments in electronics is opened to the reader. Telephoto systems, fluorescent lamps, photography's strobe lamp, tape recorders, transistors and last but not least the Ultrafax, are all discussed and diagrammed so their mechanics are easily understood.

Aircraft of the 1914-1918 War by O. G. Thetford and E. J. Riding (Harleyford Publications, Marlow, Bucks., England. Distributed by L. Breault, 180 Stephenson's Road South, Oshawa, Ont., Canada. 127 pages—\$11.95)

In aircraft publications one sees a surprisingly large proportion of inquiries relating not to the aircraft of the recent war but to those employed in that of 1914-1918. There seems to be a renewed interest nowadays in the airplanes of the past.

Information of this type has been hard to obtain unless one had unlimited time and access to an extensive reference library. These authors have sought to remedy this situation by incorporating in this book all the planes used in squadron service by the British, French, German, Italian and American flying services.

There is an excellent photograph of each plane as well as detailed information on its manufacturer, powerplant, purpose, dimensions, performance, armament, squadrons using the plane and a history of its service. Familiar names encountered include the Jagdstaffeln commanded by Boelke, Immelmann, and Baron von Richthofen; the Sopwith with the British ace Major Barker and the Canadian Capt. Bishop, the nemesis of

Richthofen, the Lafayette Escadrille and the 94th Pursuit Hat-in-the-Ring Squadron where Eddie Rickenbacker gained some of his 25 victories with the French "Nieuport 28." For the model enthusiast there is a full page scale drawing with each plane, standardized on the 1/72nd scale.

Realizing that a book such as this can put a crimp in the reader's financial situation but also being aware of its value, we suggest it be purchased from the hobby club's fund—or have your local librarian obtain the volume.

A Field Guide to Animal Tracks by Olaus Murie (The Riverside Press, Houghton Mifflin Company, Boston, Mass., 374 pages—\$3.75) is another book of the renowned Peterson Field Guide Series.

Wild animals are shy and try to avoid humans; since many mammals are nocturnal, venturing from their dens only after darkness has fallen, the only sign of their presence during daylight is their tracks, found in dust, snow, sand or soft mud. In the field it is important to be able to recognize their trails and other traces of their presence.

The author has covered just about every animal in North America, Mexico and Central America. More than 1,000 illustrations give the track and trail—not necessarily in ideal conditions, but how it would look smudged and scratched in real life. A section on twigs, limbs, bone and horn chawers make for clarification in identification of the animal. The reader is encouraged not only in identification practice but to interpret what he sees by demonstrating how an animal encounter may be reconstructed from traces in the dirt.

The book is written from first-hand knowledge, and since Dr. Murie has done extensive field work, his experiences make this not only a useful guide but a very readable one.

Underwater Adventure by Willard Price (The John Day Company, Inc., 210 Madison Avenue, New York, N. Y. 191 pages—\$2.75) is the story of Hal and Roger Hunt who have been assigned to study life beneath the sea at a paradise atoll in the South Seas.

Their adventures while using all the equipment of modern skin diving such as mask and snorkel, aqualung, undersea sled and sea rifle add up to an exciting and lucid account of undersea life. Tension mounts as the boys meet a third party of shady character; to top it all off there is a fight for survival in a typhoon.

Here is an interesting story filled with action and suspense that any young man will enjoy.

Model Ships and their construction by Bernard Reeve (distributed by The Macmillan Company, 60 Fifth Avenue, New York 11, N.Y. 113 pages—\$3.25) gives the model ship enthusiast a history of ships and ship building plus detailed advice and instruction in building authentic ships of historical interest.

There is step-by-step instruction in making your first model, with full-size plans for reference. After completion of this model a second and more ambitious project is laid before you with complete details on the basic principles of construction of the hull, deck fittings, masts and spars as well as the making of sails, flags and heraldic embellishments.

For the reader who in the past has been attracted to this fascinating hobby but has hesitated possibly through lack of knowledge, this English importation will answer a thousand and one questions on shelf-model scale ships.



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This big book is a complete record of the development of the airplane. It includes every model you'll ever want to make or identify. ALL the familiar favorites: the Curtiss Red Wing, the Antoinette, the Caproni triplane (16 wheels and 8 struts!), and the Ford Tri-motor, etc. Unusual and little-known designs like the Burgess-Dunne tailless biplane of 1914; the Sopwith Tabloid; or the Bell FM-1 Airacuda. Plus scores of odd balls that never made the grade because they were too advanced or just plain "lemons."

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■ The only full-time, long-term school for gardeners in North America is the one conducted by Canada's Niagara Parks Commission, almost within hearing of the famous Falls. Eight young men enter the school every year to start the three-year indenture. Although the total enrollment is but 24, hundreds of applications are received each year.

Students live at the school and are provided with board, room and even spending money. They study and work from 8 to 5, and have for their education 200 acres within the Niagara Parks Commission system which covers the 35-mile Canadian side of the Falls and river from Lake Ontario to Lake Erie. Six instructors teach subjects ranging from Floriculture to Mathematics; the four major courses are Botany (a knowledge of plants and their habits), Arboriculture (trees and shrubs), Floriculture (flowers) and Landscape Gardening (garden design and the use of plant materials).

Graduates of the School either work for the Niagara Parks Commission or have little difficulty finding good positions almost anywhere. The top graduating student is given a one-year post-graduate scholarship to the Royal Horticultural Society School in England. Enrollment is limited to Canadian males between the ages of 18 and 25 who are single. This does not discourage many would-be students from trying to apply from the United States.



THE READERS WRITE

Always right? Never wrong? Let's hear from you! Address mail to Air Trails HOBBIES For Young Men, 304 E. 45th St., New York 17, N.Y.

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John H. Flynn, Director of Guidance,
College of Industrial Technology,
Boston University

• Individual reprint copies of ATH's two articles "How to Become a Trained Technician," combined in one brochure, are available for 25c each—contain a wealth of helpful information.

Flight Engineer AND Model Builder . . . I am a member (in good standing, I hope) of the 16th Troop Carrier Assault Sqdn. The only one of its kind in the Air Force and the only users of the Chase C-122 Assault transport. We are a small outfit, but doing, we hope, a big job toward things to come in the way of assault work. We feel we are justly proud of our airplanes, of which there are only nine, soon to be replaced by the new bigger C-123. But the spot still leans as yet toward our old "workhorses."

We modelers in the outfit have often built replicas of our ships, but never advancing past the solid stage. So imagine my surprise when leafing through your January issue to come across the phantom view of a control line C-122 in with your ad on page 71. So wonder if you would be so kind as to supply information as to where we could possibly obtain plans or kits of this model. We would like to build a fleet of these to go along with our full-size ships.

S/Sgt. David T. Evans, Flight Engineer,
Ardmore A.F.B., Okla.

• Plans for the C-122 are available from Hobby Helpers, 770 Hunts Point Ave., New York 59, N. Y.

Yes, But Can It Walk? . . . Until we read your Dec. issue, we were under the impression that designs submitted to your "Airmen of Vision" department were to be of some practical significance, and were to have a sound technical basis limited only by the education of the designer. However, the second award for Dec. shows us how wrong we were!

It is apparent that, as final-year engineering students, we are too hampered by tradition. Therefore, casting aside any bonds

of technical limitation, we are prepared to submit plans of the ultimate in air transportation—a witch's broom. This is supported and propelled not by any old-fashioned atomic repulse ray, but by jets of pure B.M. (Black Magic), is faster than thought, has an unlimited range, and has no particular ceiling. However, we cannot foresee its use as a submarine.

We will forward the plans as soon as they let us out of our straight-jackets.

C. D. Wilson, G. G. Tourado, C. P. Van Noy, B. G. Pasfseman,
Montreal, Que., Can.

Reynolds Number Data . . . Enclosed you will find my personal check for one copy each of "Air Trails" for April and May 1950. I am interested in the two-part article by Alexander M. Lippisch entitled "Wing Sections for Model Planes."

This reference was found in "Wind Tunnel Testing" by Alan Pope, second edition, page 368. I am particularly interested in obtaining specific coordinates for the unusual low-Reynolds-number airfoil section shown as No. 5 on page 367 of that book.

C. E. Pearce,
Professor and Head Machine Design,
Kansas State College,
Manhattan, Kans.

New Converts, Men! . . . There are many patients in the VA Hospital who no doubt require a long period of hospitalization and as an aid in helping our disabled comrades we operate an Occupational Therapy Program. I am hospital chairman for the Altoona Chapter 34 Disabled American Veterans.

I am putting on a model building program including model airplanes. For this program I need model airplane magazines such as Air Trails Hobbies. This program must be a rather extensive one inasmuch as the hospital authorities in Social Service are very much interested in the program also. The VA does not finance any money for these programs and our Chapter does not have sufficient funds at this time. I hope there is some way you can help me to get this program started in our Altoona VA Hospital.

I am a disabled veteran and unable to follow my gainful occupation. In my spare time I do model building and find this is a wonderful pastime.

Germain A. Stehle, Altoona Chapter DAV,
Altoona, Pa.

• Any reader with unwanted back copies of any model magazine is urged to send them to Stehle at Box 808, Altoona, Pa.

Boats Cooperative Education . . . In reading the Feb. issue I noticed an article by Mr. (Continued on page 85)

TRAIN FOR PROMOTIONS



Think beyond just getting a job in aviation. It's not so hard to get a job; but its the promotions that follow that count. The promotions usually go to the fellow with the training and know how. Be prepared when you get that job in aviation, to get ahead.

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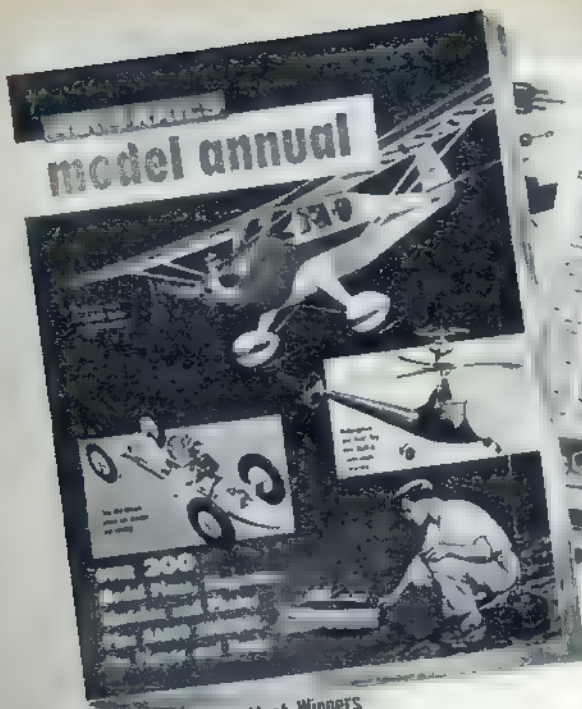
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ANALYSES of National Meet Winners

Through the cooperation of America's top-flight modelers, you now have the most detailed listing ever published of 1954's National Model Aero Championships of 1954.

U.S. Model Aero Championships of 1954

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The Wonderful World of Model Power Boating

National Model Race Car Competition

NEW "AT" MODEL ANNUAL BRINGS YOU BEST IN MODELING

NO OTHER ANNUAL CAN COMPARE
Nowhere but in the 1955 edition of "Air Trails MODEL ANNUAL" will you find so much helpful—yes, vital—data on model building. Not only model planes, but also race cars and powered boats! Every model-builder, beginner or expert, needs this publication. You get a wealth of information for a mere 50c. Well over 200 model plans, diagrams, sketches, photos, plus radio control of model planes and boats.

AMERICA'S ONLY CLUB DIRECTORY
This year the famous Air Trails MODEL ANNUAL'S "Directory of American Model Clubs" includes model boat clubs and race car groups as well as the established model-plane organizations. This time you are the major interest.

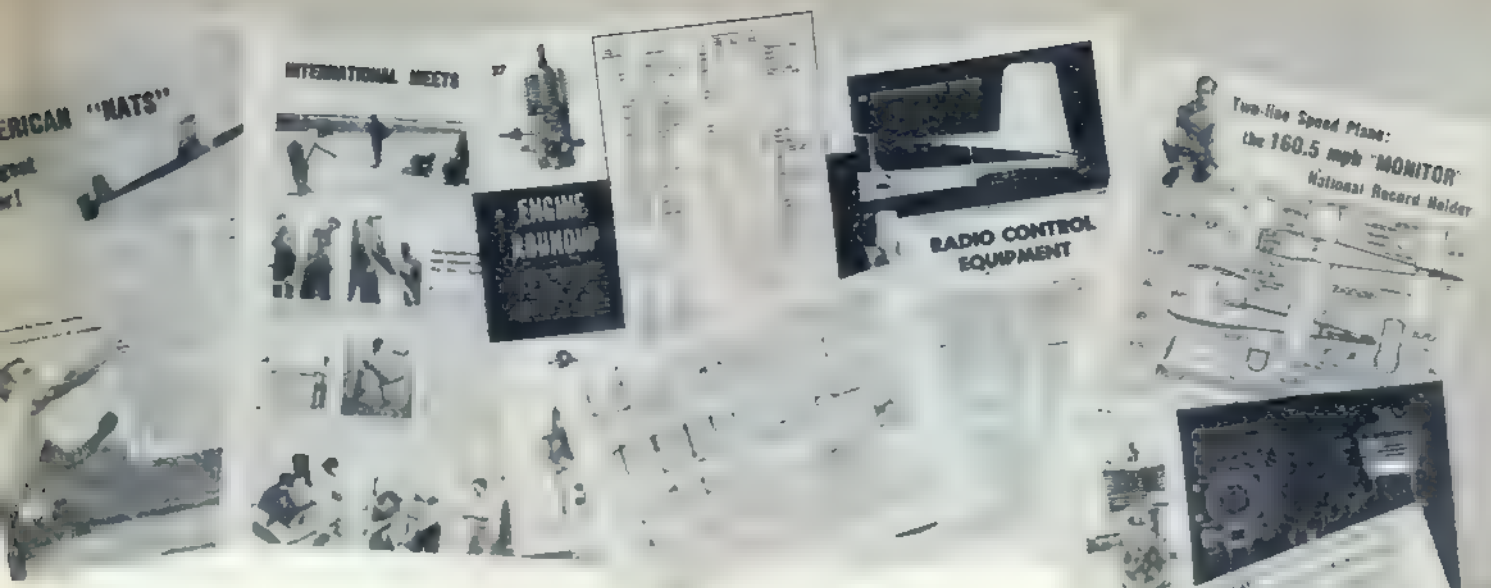
WHO'S WHO OF MODEL RACING
Something to make the miniature race car fan jump with joy is the pictorial roundup and accompanying story by Bob More on the "National Model Race Car Competition." Meet all the big shots and record breakers of the model race car world! Performance data on every entrant who raced at Evanston.

DATA ON NATIONAL MEET WINNERS
All the facts and figures on just about every 1st, 2nd, and 3rd place winner in the U. S. Model Aero Championships of 1954 (thanks to the flyers themselves for their magnificent cooperation!). What engine was used? Type of plane? Was it a kit? Fuel? Wing section? Finishing method? Etc., etc.

RADIO CONTROLLED!
Look at this! (Radio or Electric Powered!)

ISLAND FERRY

Thermal Kid
by MARK ABRAHAM



RADIO CONTROL? WHY, CERTAINLY!

No need to dwell on Cal Smith's Monocoupe or Walt Musciano's ferry boat—they "sell" on sight! What we want to call your attention to is that very helpful compilation (with data table!) on "Radio Control Plane Kits" and the photos and specification charts on R/C equipment for every surface movement.

WORLD CHAMP SPEAKS HIS PIECE

Lead-off article is by world air-model free flight champion Carl Wheeley of Washington, D. C., who explains the whys and wherefores behind his "Senior Senator" design. Plans by Cal Smith. Cutaway drawing by Douglas Rolfe.

PLENTY OF PLANE MODELS, TOO

Air-modelers will welcome with considerable interest and construction activity such outstanding features as Cal Smith's tricycle gear postwar Monocoupe which is just perfect for radio control; Roy Clough's semi-scale Sikorsky R-6 helicopter for powering with any .049 engine, a real eyepopener; Paul Palanek's control line miniature of the Central Lamson air tractor crop duster (for 14 motor) and Leland Morton's remarkable 160.5 mph speed model record holder.

CALLING ALL BOAT FANS!

Just wait 'til you see this 1955 edition! You'll discover that perfect model you've been dreaming about for years—the famous Staten Island Ferry (known as the Gold Star Mother class). Absolutely perfect for radio control and you get your choice of steam or electric motor power. And don't miss the splendid pictorial "The Wonderful World of Model Power Boating."

MODELING FOR MONEY

Would you like to? See how it's done at the big Chance Vought plant in Dallas.

ENGINE THREE VIEWS—82 OF 'EM!

This is well worth the price of admission in itself! Popular engines in three view ACTUAL SIZE drawings—PLUS an extensive chart of 68 different motors with recommendations on fuel and props!

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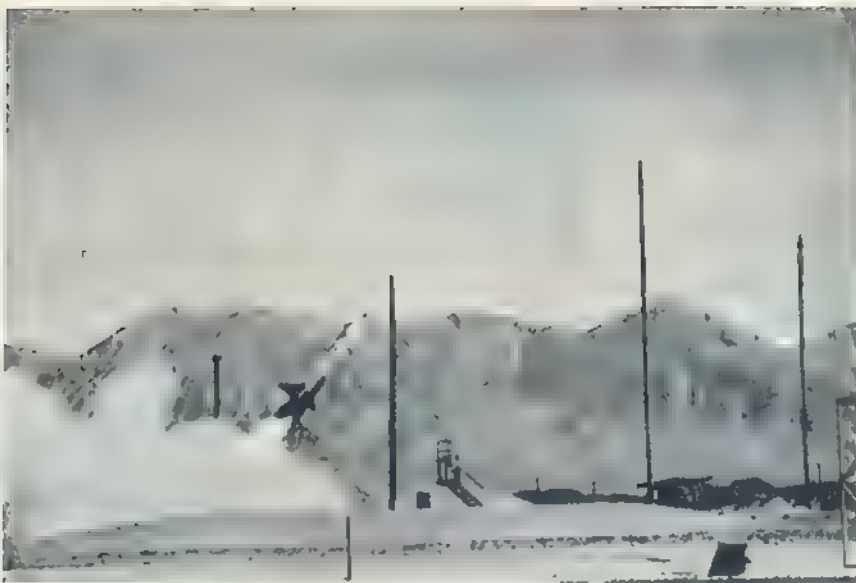
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By G. HARRY STINE
WHITE SANDS PROVING GROUND

ROCKET ENGINE TESTING. A rocket engine test stand is one of the most fantastic structures in the world. Referred to as a "stand," a "pit," or a "cell" by rocket engineers, its job is to restrain the tremendous force generated by a rocket engine in operation, to keep it on the ground so that its performance can be measured with precision instruments.

Test stands range in size from small braces made of wood or metal to the tremendous, towering concrete bastions in which engines of a half-million pounds thrust can be tested.

Tests are run for any number of purposes, but always to get data. Recording instruments accurate to within one-half of one percent measure such parameters as chamber pressure, propellant flow rate, temperatures at various points, pressures in the tanks and engine, speed of pumps and turbines, pounds of thrust developed, and differential pressures across such things as injectors, pumps, valves, etc.

From the charts (referred to as "raw data"), engineers calculate such factors as C-star (exhaust velocity), thrust, mixture ratio (ratio of oxidizer to fuel), and specific impulse (pounds of thrust developed per pound of propellant consumed per second).

To accomplish this requires more than just a rocket engine and a steel structure to hold it. Miles of aluminum and stainless steel tubing, thousands of feet of electrical control wire, dozens of hand and automatic valves, and rows of clucking, groaning recording instruments are required. It takes a stand crew of many talents, bossed by a test engineer and a crew chief, to perform these tests.

Tests are run on both complete missile propulsion systems and just the thrust chambers alone. Each requires a different sort of set-up. And the tests themselves are varied. There are the research tests where new engines are tried out. There are development tests where engineers vary the piping arrangements, starting sequences, the propellants, or the various motor parameters in an attempt to simplify or improve the performance.

The climatic tests are also important; here rocket engines are encased in large shrouds and operated at arctic or tropic

temperatures to determine how well they will perform in these climates. Finally, there are the acceptance tests where rocket engines off the production lines are given a short run to determine if they meet specifications.

A test stand in operation is a thundering, frightening thing. It is different from watching a missile go up; the rocket engine is always there, always assaulting the ears with its bedlam. It eats its way through solid granite and throws up clouds of smoke and debris from the flame pit.

Spectators have referred to it as a "controlled catastrophe." Brave men have been known to tremble violently after they have watched a test, and some have admitted they have felt nearer to death than at any other time.

Yet to the test stand crews, it is all in a day's work. Day after day, the sound of their work can be heard for miles as they bring ever closer the time when men will ride out to the planets ahead of these bellowing brutes.

TRACKING AN ORBITAL MISSILE. At the fall meeting of the American Rocket Society in El Paso, Texas, Professor Clyde W. Tombaugh of White Sands Proving Ground announced a new method of tracking long-range and orbital missiles with a telescope. Tombaugh, who discovered the planet Pluto in 1930, is presently using his method in his search for small, near-by satellites of the earth.

The method itself is simple enough: merely follow with the telescope where the satellite—or missile—is expected to be. Most astronomical telescopes follow the stars, but Tombaugh runs his telescope—an 8" Schmidt telescope camera—to make the stars come out as streaks and the suspected satellite as a dot or short trail.

With this modest equipment, he could photograph a clean, white tennis ball at a distance of 1000 miles from the surface . . . or a V-2 rocket broadside at the orbit of the Moon!

The advantages of using this technique to track orbital missiles is evident. Whether or not Tombaugh finds any natural satellites, his technique will cer-

tainly be useful at some time in the future. We will be able to keep track of manned and un-manned satellites we put up there . . . and those put up there by anybody else.

ALUMINUM ROCKETS. Bell Aircraft Corp. is working on aluminum alloy rocket engines which can be produced inexpensively. Rockets are of the regenerative type, meaning that fuel is used for cooling. Prior to entering combustion chamber it is circulated inside a space provided for it by a double wall of the chamber similar to the water jacket of an automobile engine.

Reaction Motors Inc. has developed special rocket boost power for helicopters which greatly increases the payload during take-off from high-altitude places. The rockets are faired into the rotor tip of the 'copter and are fed from a hydrogen-peroxide tank located on the rotor hub. Centrifugal force of revolving rotor blades automatically pumps fuel into the rockets.

GLIMPSE IN THE PAST. Soon after the end of War II when Allied technical and scientific teams started digging into German military secrets it was discovered that the Nazis had at least 140 different types of missiles either developed or in advance stage of research. Many featured such guidance systems as acoustics, infrared, light beam, heat and magnetic field. They also had in the works a huge two-step rocket weighing in the neighborhood of 90 tons which was designed to bomb New York.

VAN KARMAN ON SPACE FLIGHT. Addressing an assembly of 500 of the country's chief aeronautical scientists during the Conference of High Speed Aeronautics held at the Brooklyn Polytechnical Institute, Dr. Theodore von Karman, chief aeronautical research adviser for U.S. Air Force, stated that the greatest and most efficient use of rockets as main propulsive device for manned vehicles is outside of earth's atmosphere, because the rocket does not depend on air for its operation. However, he asserted his belief that the atomic-powered rocket rather than today's chemical powered designs holds the greatest hope for efficient and practical use in the future.

COLEOPTER, WHAT IS IT? A totally new wing shape embodying lightness, simplicity and compactness is subject of very intensive study and research in France.

The configuration does not look like the normal conception of a wing, being tubular in shape. It has been aptly named Coleopter, from the French word "cole" meaning collar, for, like a collar, it surrounds the fuselage of the plane. In scientific terminology this type of configuration is known as "annular." Its creator is a German scientist-engineer, Helmut Von Zborowski, formerly with the B.M.W. concern, now residing in France. One of the great advantages of the tubular wing is that it can serve as a ramjet engine itself, and with the combination of an annular type hollow-charge warhead represent an economical short-range guided missile. With a fuselage and turbojet engine within its wing it can serve as a VTO aircraft or a long-range missile. With a suitable powerplant its rate of climb can be as high as 15,000 ft. per minute, its speed around Mach 2. With such a missile, enemy bombers could be easily intercepted long before reaching our shores. For passenger VTO vehicles, the Coleopter can take either turboprop or turbojet powerplants.



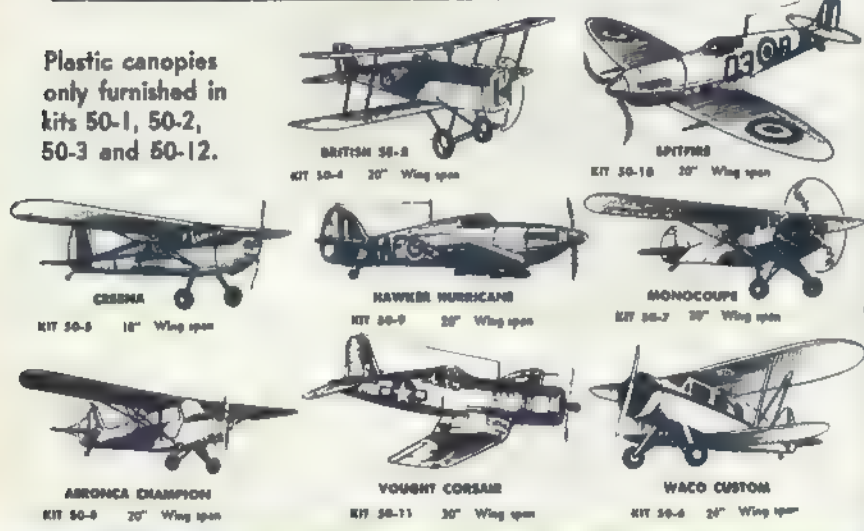
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Salutes



CAPT. "EDDIE" RICKENBACKER

America's Ace of Aces of World War I, Eddie Rickenbacker, was commander of the 94th Aero Squadron in France. He is credited with downing 26 German aircraft and for his heroism was awarded the Congressional Medal of Honor, the Croix de Guerre, and numerous other decorations. He returned from the war with the rank of captain and in 1938 became president and general manager of Eastern Air Lines. He is now Chairman of the Board.

Under his leadership, Eastern became the first airline to reach subsidy-free status, and has never had an unprofitable year.

In World War II he visited various theatres of operations on special missions for the Secretary of War. On one of these trips his plane crashed in the Pacific and he and the crew were cast adrift 23 days before being rescued. A book, "Seven Came Through" is his story of this epic ordeal.

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Model Car News



Remote control car entered in Ford's Industrial Arts Award competition had reverse & lights.

Thousands of people are active in the restoration of old-time cars of various categories, and take great pride in making said cars exactly the same as when they came from the manufacturer's plants. Now it seems this trend has hit the model car field, for we have an interesting letter from G. E. Coddling (4572 W. 147th St., Lawndale, Calif.), who apparently is busy restoring a whole stable of older model race cars.

He sent some pix of an "Indianapolis" racer produced by Barney Korn, showing how the car looks after he has brought it back as near as possible to the way Barney turned it out. This particular car was a pre-War II job and was powered by an Atwood .60, driving the front wheels. Frame and body are magnesium castings, while the hood and under-pan are made of aluminum. When Mr. Coddling bought the car—for a song, he says—it was in sad shape, with scorched paint and weird inside arrangements. The whole thing was gone over completely, including the engine; the car cost about \$54 new, 14 years ago, and he wouldn't take twice that for it now.

While the old cars are not exactly supersonic, they do look real, and always bring admiring comments and offers to buy, when taken out to the track. The Korn car is now on exhibition at Los Angeles County Museum (Automotive Section) and will be joined by seven other oldies that Mr. Coddling is now restoring.

Model Cars in "Model Annual" means more interest in the field. We refer to the new 1955 edition of the Air Trails Model Annual which went on sale nationally a short while ago. Highlight of new issue is a fine pictorial and story report by Robert More titled "National Model

Race Car Competition." You'll meet a lot of your old friends here including Walter Wilson and Joe Kantrow, Jr. If you don't find the AT Model Annual on sale locally you can obtain copies from Air Trails Model Annual, 304 E. 45th Street, New York 17, N.Y.—priced at 50¢ apiece in U.S. and Possessions, 60¢ in Canada and \$1 elsewhere.

Indoor Racing has been found to pep up winter club activity by the Morrisville (Pa.) Model Club. They have been racing both rubber and Half-A powered air cars; latter are run on a tether, but they usually run the rubber jobs free, and time them for acceleration across a room. Sounds like a good activity to keep the members interested, and a bit different from the usual indoor model plane contests.

Another car activity that is really exciting is running tiny racers propelled by CO₂ cartridges; they don't run long, but brother—how they travel! This used to be a very active sport some years ago; haven't heard anything of it in some time. It's perfect for indoor operation, since there is no smoke or smell, no fire hazard, and not much noise.

Letter from France came to Franny Wolf (Reading, Pa.) and since his French is rusty to say the least, Franny turned it over to his 15-year-old daughter, to take to school, and see if an interpretation could be had. Turned out the writer was asking about chromed cylinder sleeves, Dooling engines and Arrow cars, but even the French teacher couldn't make out much more than this; so Franny has a probable order on his hands and doesn't even know what the writer wants!

More Ford IAA entries in model division included hot rods and antiques. Scale job at right is miniature of 1903 Ford. Many contestants get scholarship and job offers as well.





Also eligible in model division of annual Ford IAA competition are race car models.

Franny has been in touch with Dooling Bros., and can state definitely that the rumors Dooling was going to put out a new type engine and car in 1955 are unfortunately just rumor. This company is tied up tight with Government orders. Regarding the dearth of cars and engines from such concerns as Dooling and McCoy, Brother Wolf has his own theories—he feels the model race car boys themselves may be partly at fault. Franny says he has heard more than one speed man, who considered himself a top grade machinist, complain that "... this *!%#@! part is no good, it's off a ten thousandth of an inch!"

Franny claims with good reason that it takes a real expert machinist to check a part to such a fine limit; meanwhile the word is passed around among the fraternity that so-and-so's parts are no good, and eventually gets back to the maker himself. The latter takes a dim view of such comments, by amateur machinists, with the result that he loses interest in making parts for this field. The moral is that if you have a part you think is a bit off, don't pan the merchandise from the house tops, but double- and triple-check, then take it up with dealer you got the part from. Maybe you're expecting too close tolerances for the price you're paying!

What is Grand Prix racing? asks Steve Oakley (233 Glen St., Roseburg, Ore.). He says he has heard the English model car builders go in for this and he can't imagine what it's all about. Well, it is simply a very deluxe form of rail racing, and is also called "Circuit" racing and "Steeplechase" racing. We believe it all started when a track for this sort of operation was set up and operated at the "Model Engineer" yearly model exhibition in London, in 1952.

The track used was 378 ft. around and included many tricky turns with some steep up- and down-hill sections. The first cars had roller guides, but it was soon found they would not do, and other and more satisfactory means were found to hold the cars to their rails. The tracks with which we are familiar have three rails, so of course, three cars race at once; the exhibition tracks are done up with all sorts of realistic (Continued on page 19)



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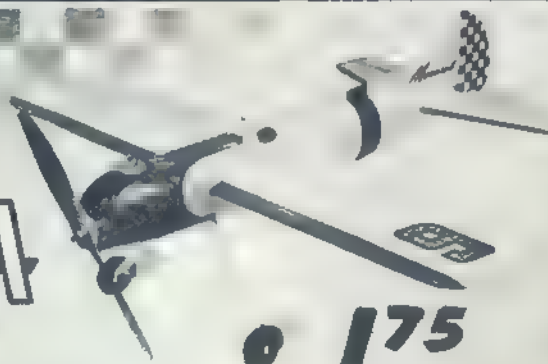
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Tech Topics



JET FIGHTERS will be able to operate closer to front lines in the next war, taking off from a device which literally dispenses with airfields—the “zero length” launcher jointly developed by the U.S. Air Force and the Glenn L. Martin Co. Very similar to platform used to “shoot” the Martin B-61 Matador, it consists of a highly mobile truck which can be brought to take-off site located right behind the lines. First airplane to be flown from this mobile airfield was a Republic F-84G Thunderjet piloted by Martin test pilot Bob Turner (photo above). The airplane was suitably modified to take a large Jato bottle as used on the Matador.

RYAN Aeronautical Co. was awarded a contract by USAF for the development of jet-powered VTO airplanes. . . . Professional Race Pilots Association, whose president is Steve Wittman of “Bonzo” and “Buster” midget racers fame, has joined the National Aeronautic Association as affiliate member. . . . All-Magnesium F-80 Shooting Star jet fighter built by East Coast Aeronautics, Inc., for Wright-Air Development Center to test magnesium structure on airplanes. Main advantages are the almost inexhaustible supply of the metal, greater resistance to buckling effect, lightness, which permits thicker skin, and therefore lesser susceptibility to damage from ground handling. . . . By 1963, New York City heliports will be handling at least 300 passenger helicopter landings per day, according to New York’s Commissioner of Marine and Aviation, Vincent O’Connor. The ‘copters are expected to have a capacity of 20 to 40 passengers.

A MODERN RESEARCH PLANE can fly $5\frac{1}{2}$ miles in 12 seconds; it took the Wright brothers 12 seconds to fly 40 yards. For supersonic testing—a 15,000 square mile area, between Edwards AFB and Death Valley, declared restricted zone as per request of military services.

. . . Piasecki HUP helicopters had their power upped from 475 to 700. Latest Model HUP-2 is now equipped with Wright R-1300 engine instead of Continental R-975 of the former HUP-1.

BUREAU OF AERONAUTICS has a number of vacancies available for aeronautical engineers in the Airframe Design, Airborne Equipment, Power Plant and Research Divisions, all located in Washington. Information regarding duties, grades and salaries can be obtained by writing Mr. M. H. McCann, Room 3909, Main Navy Bldg., Washington 25, D. C. . . . Supersonic ace Maj. Chuck Yeager found himself in the role of a Good Samaritan some time ago when two USAF F-86 Sabres stalled on an airstrip in Sardinia, Italy. The two jets landed there on a cross-country flight because of fuel difficulties and could not get started due to the absence of a starting cart. Hearing of their plight, Maj. Yeager, then stationed in Germany, hopped into a T-33 jet trainer and flew to Sardinia. He put his airplane with the exhaust pipe facing the front of each Sabre, and the gases rushing out started the stalled planes. Both pilots took off and Yeager returned to his home base.

ROBERT E. GROSS, president of Lockheed Aircraft Corp. was elected to the presidency of the Institute of Aeronautical Science for 1955. . . . New type of tubeless tire incorporating nylon and special liquid rubber developed by U.S. Rubber Co. The Royal Master, as the tire is called, will give 22 percent better mileage, a silent ride, and has scuff-proof white sidewalls. It is specially designed for high-speed driving. . . . Terrific acceleration of the rocket-powered sled, 0 to 632 mph in five seconds, and even greater deceleration which imposed a 35 G force on its rider Lt. Col. John P. Stapp, all combined to give him a pair of black eyes resulting from the eyeballs pressing

forward against eyelids when the sled decelerated. . . . There are 70 million drivers of cars, trucks and buses in United States; one third of them are women.

ATOMIC ENERGY COMMISSION awarded contract to American Locomotive Co. for design, construction, testing and operation of package nuclear powerplant for military purposes. It will be transportable by air for use at remote bases where delivery of bulky fuel is difficult.

GOODYEAR Tire & Rubber Co. has added a new unit to its line of See-Bee outboard motors. Developing 22 hp, the latest outboard is so quiet that it permits normal tone conversation while running at full speed. . . . North American Aviation has delivered its last T-28 trainer to the Navy and Air Force. . . . Improved version of the British Armstrong Siddeley Sapphire jet engine develops 10,200 lbs. of thrust without use of afterburner or other thrust-augmenting devices.

GLENN L. MARTIN CO. received orders from the Air Force for a number of B-57C twin-jet Canberras modified as transition trainers. Planes will be used for night instrument flight training, in giving piston-engine pilots jet experience and indoctrinate fighter pilots in multi-jet flying. A fuel-air combustion starter for jet planes can crank a jet engine up to starting speed in three and a half seconds. The unit develops 340 hp in 3.2 seconds. . . . The McDonnell F3H-1N Demon Navy fighter is too easy to fly, according to Lt. Col. Frank Everest, chief of Flight Test Operation Division, Edwards AFB, Calif. “There is so little chance of getting into trouble,” said the Colonel after a flight in the fighter, “that I could develop sloppy flying habits.”

FIRST NUCLEAR POWERED aircraft engine will be a turbo-jet rather than a propeller type, in the opinion of the British. It is also expected that the first airplane to be equipped with such a plant will be a large flying boat. Estimated weight of an atomic airplane is in the vicinity of 150 tons. . . . Chief disadvantage of the afterburner is its enormous fuel consumption, which increases 300 percent over the normal amount used by the engine. Thus, a turbo-jet developing 17,000 lbs. of thrust with afterburner lit may gulp as much as 6350 gallons per hour. If the speed of the airplane reaches Mach 1.5 at sea level, the afterburner consumption will rise to 10,000 gph.

AUTO ENGINES OF FUTURE will be so quiet, according to David C. Appe, head of noise and vibration laboratory of General Motors, that drivers will be able to tell that it is running only by checking oil pressure gauge.

CIVIL AERONAUTICS ADMINISTRATION, alarmed by progressive lessening in the number of students, private pilots, and mechanics, is launching a program designed to spur youth’s interest in aviation. Part of the scheme consists of encouraging building from kits both powered and motorless aircraft, and setting up aviation education courses in grade schools as well as in high schools.

Model Car News

(Continued from page 17)

scenery, including "pits" for servicing and storing cars that are not in action, miniature grandstands, etc.

The cars themselves are all close scale copies of the big ones, some of them representing sports cars, others follow out-and-out racer lines. Engines in the first Grand Prix races were limited to a maximum of 1.5 cc. (about .09 cu. in.) and were all "diesels." Some of the little cars are real masterpieces of scale construction, with perfect wire wheels, hoods with dozens of exact-size louvers, full cockpit equipment and even leather upholstery!

The cars are fitted with miniature centrifugal clutches, which have to be adjusted just right, if they are to make good time up the rather stiff grades. Many of the early cars had steerable front wheels, and the shoe that fitted over the rail was able to swivel and was linked to the wheels, so that the cars actually were "steered" around the turns. This design feature seems to have been unnecessary, though, as more recent cars with fixed shoe and wheels apparently take the turns just as well.

Most of the tracks are built in sections, so that they may be taken apart for storage or transportation, and surfacing similar to our Masonite is used. While this sort of racing started as an exhibition "activity" show, it has been taken up by quite a few car clubs, with the result that regular races are now scheduled between clubs in various parts of the country. The cars have been variously classified for engines of 1.5, 1.0 and .75 cc, while a .5 class may also be tried. Most of the tracks are shorter than the big original "Model Engineer" job, and it has been found that a track of 75 ft. around can be a lot of fun.

For those who place scale appearance and action above pure blinding speed, this sounds like an ideal activity; more information on it may be had by writing to Secretary D. J. Roskilly, Miniature Motor Sport Club (58 Beaufort Rd., Ham, Surrey, England). We understand there is a 104 page book on the subject, to be had for about \$1.20, from Percival Marshall & Co. Ltd. (19 Noel St., London W. 1, England). We would be very much interested to hear of any racing of this sort that has been done in the U.S.

Commercial Items. Plans for scale models of the Jaguar and many other cars may be had from Carroll Wilke (Box 142, Arlington Heights, Ill.). The Jag plans cost \$1 and are to 3/4" scale; there is a free list of all the others that are ready.

Very realistic scale wire wheels are made by Saunders-Swader Toy Co. (Aurora, Ill.) in 1/9/16" size. They come in five wheel sets for \$1.20, and the wheel portion is of plastic, with a realistic treaded rubber tire. 1/4" hole in the hubs.

Since the engines have not been made for some years, Dooling parts are very scarce. However, you can get what you need for both the 29 and 60 engines from Franny's Chrome Specialty Products (513 Vesta Place, Reading, Pa.). Also new and used Dooling engines, hopped-up versions, chromed or plain sleeves, etc.

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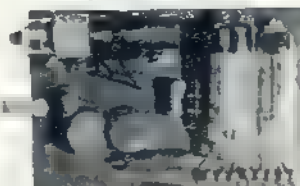
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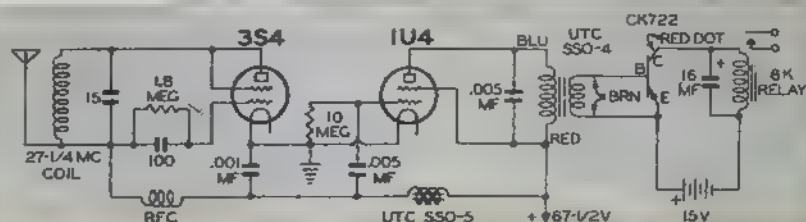
■ Our lead photo this issue presents Paul Geivitt of Kansas City, Mo., with his gas engine powered radio control car. Picture was supplied by A. R. Peterson. The car is a beautiful original design and Mr. Geivitt is to be congratulated on an extremely neat installation. We'd like to know more of the technical details.

Transistors to the Fore! Well, actually, in the case of the circuit we show here-with, it's "transistors to the rear," for the transistor is used at the tail end of a

more or less standard audio tone receiver. The circuit shown has been used by John Dixon (W8IPJ, 13444 W. McNichols Rd., Detroit 35, Mich.); it has the advantages that A drain is considerably less than with a tube to work the relay, and relay current is low with no signal.

The first tube is the usual super-regen detector, and note that only half the filament is to be used, to halve current drain. The 1U4 acts as a power amplifier, and is coupled to the transistor through a sub-miniature AF transformer. The .005 mf. across the left hand winding is a bit fussy; if too small, it lets some of the quench frequency through, and the transistor current won't go down as low as it should with no signal. If too high, it bypasses too much of the signal. John found .005 was right for his receiver, but a bit of experiment here might give better results.

While a separate 15 V. battery is



shown for the transistor, you could tap off the main B battery. The filament drain is 100 ma. while drain on the 67½ V. battery is about 2 ma. Relay current is usually less than .2 ma. with no signal, rising to 1.8 ma. when a tone is received. This set is normally operated with carrier-on. Relay current with no tone depends upon the particular transistor used; John has found that some CK722's will idle as low as 20 microamps. (.02 ma.).

New Clubs. The "Flying Chips" is a new R/C group composed mostly of inexperienced R/Cers, if we are to judge from the letter of Neil Wilson (27 N. Caroline St., Crystal Lake, Ill.), who states that they are busy building a large club plane. It will be flown with single control at first, then they hope to install the works.

Another new organization comes to light, through a letter received from Richard Snyder (High Rock, Pa.)—the "Skyclippers Radio Control Club." He is Secretary, and says members have a variety of planes flying, including several versions of Berkeley's Buccaneer. One member has a huge biplane with 8 ft. top wing almost ready to go; it is powered by a Fox .59 and will have rudder and elevator control, via Dmeco Multi-Servos and CR receiver. This group would like to hear from R/C experimenters in Pennsylvania and Maryland, and welcome other fliers to their field. They are located about 20 miles from York, Pa.

Boats and Planes are both operated by members of the new K.C./RC Association. Membership was over 30, when we last heard, and is still growing. Meetings have featured movies, technical sessions where new R/C equipment was shown and described, and even one meeting where tubes brought in by members were tested. An R/C boating session ended with Max Beal the winner, with 86 points, pushed closely by Len Marshall with 82. Prizes were awarded to 4th place, and very little radio trouble was noticed at this contest; however, Bud Atkinson burnt his pants and Ralph Stoltz lost a glove in the fire they had to keep warm! For details on meetings, call A. R. Peterson (Pete's Hobby Shop, 5725 Prospect St., Kansas City 30, Mo.).

Winter operation is still going on for the "Flying Sparks;" Pete Bliss (47 Corning Blvd., Corning, N.Y.) says they fly every Sunday, as long as wind is less than 30 mph and the temperature over 15! Well-known contest flyer Dick Allen has gotten married and moved to Vestal, N.Y.; Dick is starting a new R/C club there, to give his old gang a battle. Pete says the Sparks will have their second R/C meet on June 12th; mark this date and keep in touch with him for full details.

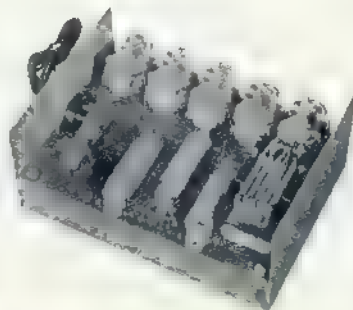
Technical Dept. The Good twin-tube pulser, shown here in the Jan. 1955 issue, has turned out to be very popular; we have heard of successful copies being built all over the country. Had interesting comment on this pulser from Helmut Keuhnel (45 Crenshaw Ct., Hampton, Va.), who has been using a mechanical pulser for some time. Helmut has built the Good unit and finds that it has no critical parts whatever. He has cut the B voltage down to 22½ and still gets excellent results; at this voltage the current drain is 1.9 ma., while 45 V. gives a current of 4.4 ma. Helmut strongly recommends this pulser with his Dual Proportional Control system, which is described in this issue, and says he thinks Walt Good should get a medal for letting the R/C boys in on this one.

Long Life RK61 (Continued on page 69)

NEW MODEL RR-5 RECEIVER

Dependable 5-Channel resonant reed receiver. Engineered for simple tuning, low current drain and high sensitivity, weighs 8½ oz., size 4½x2½x1½ inches. Complete, fully assembled in attractive grey hammertone case.

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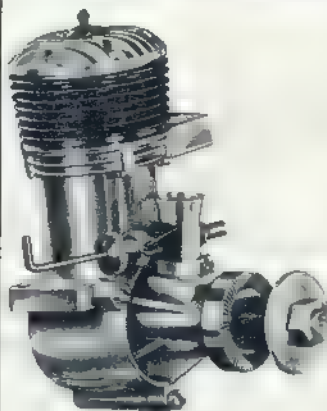
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Please advise us if you move, giving old address and new address; allow four weeks for change of address; address subscription mail to Subscription Department, Air Trails HOBBIES For Young Men, 304 East 45th St., New York 17, N. Y.

Speaking of HOBBIES

STARTING A SECOND CENTURY OF SERVICE

This year marks the 100th birthday of Street & Smith Publications, Inc., publishers of "Air Trails HOBBIES For Young Men." This is quite a milestone for any business; in the publishing field it is particularly significant. "ATH" is the oldest publication produced by S&S which still retains its original name (if only in part).

ATH/FYM started off in October, 1928 as "Air Trails—Stories of Aviation." Featured on the cover: "Vikings of the Air" by J. Allan Dunn. This publication has come a long way since the days of Bill Barnes (that's Bill at the right); it has seen considerable change; today it exists to serve mechanically-minded young Americans, especially those in the 13 to 17 age bracket.

As Street & Smith celebrates its 100th birthday, we look back upon an eventful year of operating as Air Trails HOBBIES, which began with the April 1954 issue (cover drawing reproduced lower right). The past twelve issues have been exciting ones for us; we hope they have been for you, too. We have continued to present the best in air-modeling and to that have added features and columns on model boating and model race cars. Radio control has come in for even bigger coverage. In addition to all that we have explored many different hobby activities.

As a service to our readers and as the only newsstand publication in America regularly presenting such material, Air Trails HOBBIES has offered many helpful articles on careers and scholarships, schools and training courses. It is gratifying to the editors to observe such splendid response to articles and columns devoted to those subjects. We are pleased to report that the two most enthusiastically received presentations during the past year were the 2-part career articles "How to Become a Trained Technician" and the model building "Scale Flying Piper Cub J-3—Perfect Project for Radio Control."

Back in 1855 when Francis Shubael Smith and Francis Scott Street joined forces to publish the "New York Weekly Dispatch" there were no typewriters, telephones, automobiles—not even electricity. In the years that followed the Smith family took over the active direction of the company; today's president, Gerald H. Smith, is a grandson of the founder. And, we're delighted to report, a model builder, too.

Street & Smith introduced such innovations as the Buffalo Bill stories and color to the front cover of magazines; it presented George Bernard Shaw and Josh Billings (in real life S. K. Shaw—check Grandpa on such Billings' pronouncements as "When a fellow has to belittle others to enlarge himself, he must be pretty small potatoes to start with").

Your Dad probably can recall Street & Smith's famous paper-backs for boys—publications like "Frank Merriwell's Test" and "The Young Book Agent" by Horatio Alger, Jr. Or some of the famous writers that Pop found in S&S magazines—authors like A. Conan Doyle, Booth Tarkington, E. Phillips Oppenheim, Albert Payson Terhune . . . and so on and on for an eventful 100 years.

With such a glorious past naturally Street & Smith looks forward to a useful future. And here at ATH we'll continue to serve mechanically-minded young men of America . . . for it's the engineers and scientists of tomorrow who will make this a better world for all of us.—A.L.L.

Air Trails

STORIES OF AVIATION

VIKINGS OF THE AIR — J. ALLAN DUNN



Raoul Whitfield—
Kenneth Gilbert—
Robert Carson
and Others



STREET & SMITH PUBLICATIONS, INC.

Our 100th Year—Established 1855

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APRIL, 1955

Your 40 Career Field AIR FORCE

Today, our AF must have highly skilled technicians to maintain lead. Today, airmen get chance to learn careers through special training in the service.

■ Today's Air Force is a far cry from World War One's struts and wire era. Then maintenance and operation were simple, requiring minimum personnel on the ground and in the air. A modern Air Force, with its ultra-fast jet aircraft stuffed with electronics and "systems" can no longer depend on the old-type mechanic or a "bell-fixer" electrician. To keep 'em flying, skilled technicians in electronics, guided missiles, jet and rocket propulsion, air traffic control, meteorology and instrumentation are needed. And these represent but a handful of the more than 40 different career fields which the U.S.A.F. covers in present training, in 200-plus courses. The Technical Training Air Force (Tech TAF) now operates 45 schools all over the U.S. It costs \$3000 to \$15,000 to produce a competent specialist. For those who contemplate joining up, the AF has available a descriptive booklet "Pocket Guide to Air Force Opportunities" upon which we base this data. A copy can be obtained at your local Air Force Recruiting Station. It is free.



AIRCRAFT AND ENGINE MAINTENANCE. Includes such courses as Rotary Wing Mechanic—95 academic days; fundamental course in servicing helicopters and all their components. Aircraft Mechanic on Heavy Bomber—130 days; teaches operating principles, inspection and repair of airframes, components and systems. Aircraft Reciprocating Engine Mechanic—85 days; fundamentals of mechanics, constructional features, operation principles and maintenance of piston engines. Aircraft Jet Engine Mechanic—90 days; repair, maintenance, trouble shooting and minor overhaul. Pilotless Aircraft Airframe Systems and Power Plant Mechanic—40 days.



ARMAMENT SYSTEMS MAINTENANCE. This career field includes Armament Systems Fundamentals—105 days; designed to qualify airmen students for entrance into basic armament systems requiring knowledge of electricity and electronics. AN/APQ-2 System Mechanic—185 days; basic course involving radar bombing systems, operational checks and maintenance. Gunlaying System Mechanic B-47—170 days; training in the maintenance and repair of turret system and radar controlled armament of B-47. Gun-Bomb-Rocket Sight Mechanic—25 days; course in maintenance of entire mechanical fire control systems containing A and K series gun-bomb-rocket sight.



WIRE MAINTENANCE. Among courses in this field are General Office Equipment Specialist—135 days; installation and maintenance of telephone office equipment, fundamentals of wire transmission, portable and fixed plant equipment. Communication Machine Specialist—130 days; gives basic knowledge of installation, inspection and maintenance of teletype and facsimile machines.



MUNITIONS AND WEAPONS MAINTENANCE. Includes Munition Specialist—90 days; students receive training in handling and servicing of explosives, incendiary and toxic munitions, solid and liquid rocket propellants, and in detecting biological, chemical and radiological contamination agents. Weapons Mechanic—70 days; learn to stall, maintain and repair weapons, etc., load munitions.



INTRICATE EQUIPMENT MAINTENANCE. Camera Repairman—145 days; maintenance training in ground and aerial cameras, motion picture equipment and fundamentals in electronically controlled photo equipment. Mechanical Instrument Repair—80 days; disassembly, overhaul of mechanical aircraft instruments such as altimeters, directional gyros, etc. Electric Instruments Repairman—105 days; electrical instruments such as auto-pilots, electronic compass.



COMMUNICATIONS OPERATIONS.

Communication Center Specialist—65 days; utilization of teletype equipment and procedures for reception and transmission of messages, maintenance and repair; familiarization on facsimile and 'phone switchboard operation. Cryptographic Operator—55 days; course in operation, utilization and security of cryptographic devices: enciphering, deciphering, coding of classified message and typing. Radio Operator Fundamentals—75 days; basic course in International Morse code, hand sending technique, typewriting, elements of electricity and magnetism. Airborne Radio Operator—155 days; voice and code.

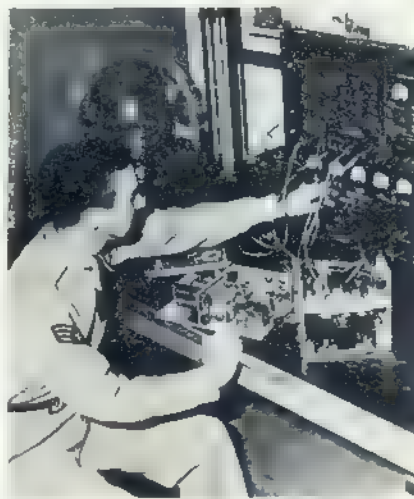


AIR TRAFFIC CONTROL AND WARNING.

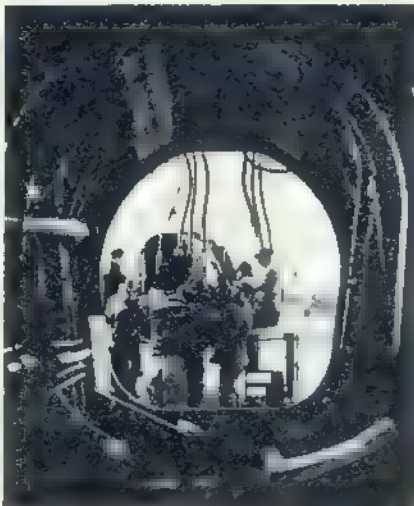
Air Operations Specialist—45 days; weather theory, navigation aids and equipment, aircraft characteristics and restrictions, air traffic rules, and facilities, flight clearance procedures, military flight service ground communications. Air Traffic Control Operator—70 days; basic weather theory, aircraft classification, theory of flight, air traffic regulations, airport traffic control, air-route traffic control, radar traffic control. Aircraft Control and Warning Operator—30 days; operation of ground radar, radar familiarization, plotting, electronic countermeasures, operation of Aid Defense Control and Direction Centers.



PHOTOMAPPING. Courses include Construction Surveying—10 weeks; trains airmen to establish relative position of points on the earth, by measuring distances, angles and differences in elevation, and to record surveying instruments observations. Topographical Surveying—10 weeks; methods of establishing control data for military photogrammetric mapping, use of surveying instruments.



WEATHER. Ground Weather Equipment Operator—115 days; observing and recording of conditions, operation and maintenance of weather instruments, evaluating rawinsonde operations. Weather Observer—85 days; observing and recording of weather, plotting of weather information. Meteorological Technician—200 days; advanced course for selected airmen in weather analysis and like.



BUT ALL IS NOT WORK and study for the airmen in Air Force schools. There are plenty of social and recreation facilities available. The bases are well equipped with hobby shops stocked with tools and material where an enthusiast can indulge in his pet occupation, whether it is woodcraft, model-building or souping up his jalopy. A game of golf at nearby links helps to keep him in physical trim. And for the man who likes to read, there are base libraries.



RADIO-RADAR SYSTEMS. In this are included such courses as Radio Fundamentals—115 days; characteristics and generation of direct and alternating currents, physical and electrical characteristics of radio circuit components, theory and operation of vacuum and gas electron tubes. Airmen Electronics Fundamentals—115 days; includes receiver and transmitter theory and analysis of detectors, components and circuits to form the radar indicator. Aircraft Control and Warning Radar Repairman—200 days; check and maintain early-warning and height-finding radar. Automatic Tracking Radar Specialist—195 days; course in operations, repair of such equipment.



AIRCRAFT ACCESSORIES MAINTENANCE.

The following are in this field; Aircraft Propeller Mechanic—95 days; trains airmen in the servicing of hydraulically and electrically operated propellers, controls and accessories. Pneumatic Systems Repairman—85 days; a basic course in the fundamentals of mechanics with emphasis on maintenance of aircraft air conditioning, pneumatic, oxygen, anti-icing and defogging systems. Aircraft Hydraulic Mechanic—90 days; operation, maintenance and repair of hydraulic jacks, test stands and booster pumps, inspection of aircraft hydraulic and allied systems . . . There's much more in every field; check Guide and see.



AUTO DESIGN COMPETITION



FIRST

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AWARD



SECOND

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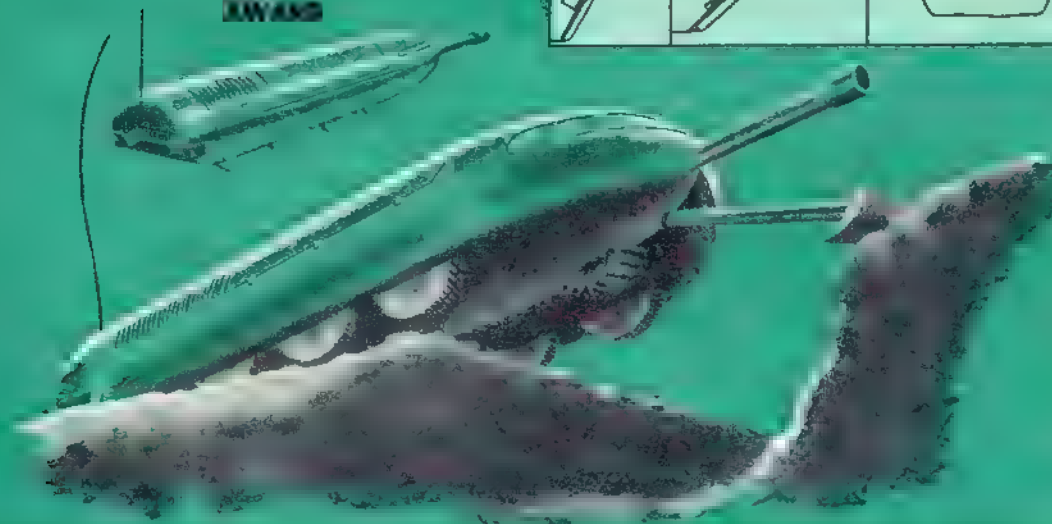
AWARD



THIRD

\$10

AWARD



The Alligator, by Choi Se Chul of Seoul, Korea. One-man multi-purpose armored vehicle for assault, defense and reconnaissance duty. Armed with machine gun and flame thrower. It is amphibious, can climb and descend steep inclines. Negotiates ditches by means of special telescoping device which acts as a sliding bridge. Has 250 hp engine.

It's easy to enter—

All types are eligible: restyled passenger cars, original sport jobs, hot rods, or military types.

AWARDS OF \$50.00—\$25.00—\$10.00 EVERY ISSUE

Cash awards will be made each issue for the three most significant auto designs submitted to this magazine. \$50 will go to the top design, \$25 to the second and \$10 to the third. You may submit sketches for an original design auto, for a restyled car, for sportscar, family sedans, record cars, hot rods, military vehicles or unusual trucks. Include side, front, rear and top drawings, plus sketches of the proposed vehicle from three-quarter front and three-quarter rear positions. Sorry, we cannot enter into any correspondence about this contest. Send entries to Auto Design, c/o Air Trails HOBBIES For Young Men, 304 E. 45th St., New York 17, N. Y.

HOW WE CAN BUILD A GREATER A.M.A.

By C. O. WRIGHT, Past President Academy of Model Aeronautics

Although these comments are concerned directly with the air-modeling national governing body, Mr. Wright's suggestions contain many fruitful ideas which should interest the model boat and car groups, too

■ More than two decades ago the Academy of Model Aeronautics was organized, and though it has reached the age of adulthood, in many ways it is still in knee pants. All Academy members, juniors, seniors, opens and leaders, are aware that we must have a stronger national organization to sponsor and supervise the model airplane activity. All are conscious of the expanding needs, too many of which are not met through the AMA as it now functions. As we say this, we must hasten also to say that we are proud of the many past achievements of the Academy.

WHAT THE ACADEMY IS

The Academy of Model Aeronautics is a national organization, one of many hundreds of national organizations in this country which have purposes and national programs. The aim of the Academy is to promote and govern model aviation so that it may achieve aims which are recreational, educational and scientific. The purposes of the Academy are shifting emphasis from the scientific objectives of twenty years ago to recreational and educational purposes of today. However, the purposes of AMA, though they may be changing, are the strongest unifying element of the organization. Or in simple words, *the Academy is held together because its members are interested in the same thing, namely, building and flying model airplanes for sport, for contests and for testing new ideas in aeronautics.*

The Academy is a simple membership organization which is financed mostly on dues of its members. It might be wonderful if there were a Lady Bountiful to support the AMA treasury, but little has come to the organization through its nearly twenty years of life by way of endowment and gifts. Some Academy leaders are still hopeful and looking for a Santa Claus, but others, including the author, share the idea that AMA members must pay to build the kind of organization they want. There are plenty to do this if support is recruited from the hundreds of thousands who love the model airplane hobby.

AMA MEMBERS—CROSS SECTION OF AMERICA

The members of the Academy have only one characteristic in common, *interest in model aviation.* This is a limitation which is highly significant in a consideration of our subject, that is, building a greater Academy. Look at us. We are the beginner in the elementary school just learning what a line of thrust is, and we are also a highly trained professor of Physics with a Ph.D. degree and a record of scientific achievement. Some of us drive trucks, build houses, run banks, work in factories, direct sales forces, pilot commercial planes, design diesel motors, edit papers, farm, teach school, work in garages, carry papers—in fact we are a real cross-section of America. We are young and old, boys and girls, men and

women of all extractions and races. Has it occurred to you how difficult it may be for people so different to work together? Some of us talk a lot, some are overly quiet. Some are argumentative and others very docile. Some are rugged individualists, others are overly-developed extroverts. We understand each other when we talk modeling, but our other worlds may indeed be very far apart. Agree on a program with such basic variability? That is asking a lot, but it can be done if we move the right way.

And if our differences in age, ways of making a living and habits of living are not enough, look at *where* we live. We are from every state in the Union, and "believe me you," that makes us see the same thing in various shades of color. The fellows from New England react differently, especially in the long winter months all shut in with snowdrifts, than do the shirt sleeve boys in Los Angeles. The Midwesterners with high altitude and open spaces have different ideas than our genial, swamp and wooded section friends in Alabama. And the Brooklyn and Chicago boys—well, you need special classifications for those hot shots.

HOW AMA COMMITTEES SOLVE PROBLEMS

There are three steps in solving problems for any organization, be the organization one of doctors, teachers, farmers, laboring men or model airplane builders: (1) The problem must be defined. (2) A Plan must be developed to solve the problem. (3) The plan must be put into operation. At the start members are aware of problems but are not united on exactly what they are. It takes a lot of talk to get problems out of the haze. A definition of the problem comes only through a sharing of thought (opinions), and that is why the Academy has its new committees on by-laws, finance, insurance, clubs and chapters, membership, etc.

If a committee devotes time, interest and *ample discussion wherein all share*, eventually the problems will be isolated and stand out like sore thumbs. At this point the committee has just started its work. Next, by the same time-consuming process it must consider all plans for solution that anyone thinks of and decide on a definite plan. The third step which follows naturally is that of putting the plan into operation. If the first two steps are well taken, the third comes much more easily. In fact, there is no short cut to solving problems of any organization. Much of the trouble with AMA in the past has been that we have tried to move from hazy problems to plans of action without going through the three steps essential to success.

SOME OBJECTIVES

- The Academy must enlarge membership by putting on concerted drives in all states and sections.
- The Academy must have a larger budget. It needs \$100,000 for an adequate

program each year.

- Field service by the headquarters staff is a real "must."
- The Nationals require year-round promotion.
- We must provide well-qualified International Event teams.
- We should work for greater safety, better sportsmanship at meets and improved public relations.
- As an Academy we must give every encouragement to the manufacturer and dealer who are producing honest merchandise and distributing it honestly for the interest of the modeler at a fair profit. Shoddy products must be discouraged.
- We must continue the program to liberalize the rules on radio control so that the rules will be in the broad public interest.
- We must strive to build stronger local model clubs and to encourage the organization of sectional organizations where there is local interest. The Academy should not force sectional organization but should assist in the work when there is request.

NOT ME BUT WE!

We can build a greater Academy when all members pull together for the cause. The "let George do it" attitude must be discarded, with every member doing his part—not because of what he gets from the AMA, but because AMA offers an opportunity for the modeler to serve and advance the cause of model aviation.

Specifically, what can each Academy member do to build a greater AMA? Here are some suggestions: (1) Keep posted on Academy affairs by reading the model magazines, the AMA publication ("Model Aviation") and Academy reports. (2) Vote on all matters submitted to the membership by mail. (3) Boost the AMA at local club meetings. (4) Get everyone who builds models to join the Academy. (Pay your own dues as soon as you can after January first each year.) (5) Send ideas to AMA officers, especially local vice-presidents and contest board member, that you and your club may have. (6) Attend the Nationals if possible and sweat through the business sessions which generally run until midnight.

This we instead of the *me* attitude will prompt the Academy member to throw his ideas on the table and take part in the pro and con discussion. When a decision is reached by the group, then the member will get behind the program, support the plan or rule and go with the we element till things may be changed.

Every member of the Academy of Model Aeronautics counts one! Put these "ones" all together and we have a mighty army to advance the cause of model aviation. Indeed, we are potentially very powerful. Are we actually as powerful as we are potentially? With the we emphasis, we can be. "Can we build a greater AMA?" Yes we can. You are the most important part of that we.

Wingless Wonder Air-Boat



This fugitive from a control line circle (we refer to the boat and not the author) is a project that will find air fans on familiar ground—pardon us, we mean water!

By PAUL DEL GATTO

■ We placed the *Wonder* on the water to get a fair idea of where the water line would be and just how high the bow sat. Everything appeared to check out just as we had hoped.

Looking at her we somehow sensed that this gal had what it takes, for she certainly had a determined air about her. Well—now or never, we figured, so we got set.

A half tank of fuel ought to take her across the lake if she's doing at least 10 mph, we thought—and then we fastened the booster leads to the engine, flipped the prop, one, two, maybe three times, then a little prime, reset the needle valve and began to flip the prop again; one, two . . . the engine roared to life. Off came the booster leads, we reached for the needle valve to lean her out a bit more. "Sounds fine, Paul," said photographer John Schneider. I nodded with satisfaction and set her down in the water. She was tuggin', full of pep and rarin' to go. That tense moment past, I released her.

She cut through that water like a knife through melted butter. Steady she was, too; it seemed as though she could move mountains without veering from her course. But she was doing about 20 mph. A picture of grace and beauty, she

continued her trip across the lake on that maiden voyage; hence we struck upon the name of "Sea Queen" as being most appropriate, but editors will be editors and the name was changed to *Wingless Wonder* since the craft looks just like a plane model minus a stab and wing tips.

But *Wingless Wonder* is more than just a boat, for it embodies some of the basic features incorporated into the design of an airplane. The air propeller, for instance, which affords greater efficiency through the elimination of the flywheel, stuffing box, drive shaft and other accessories essential to a conventional boat design. Then there is the wing surface separating the two planing hulls, which as the speed increases lifts the boat higher in the water, thereby reducing the friction drag of the water on the planing surfaces. Conceivably if the speed were great enough it could probably lift right out of the water despite the fact that the planing surfaces have been designed not to induce take-offs.

Note the small step and the shallow angle of the afterbody. While these are important for efficient planing they are not suited for take-off conditions. The twin-hull arrangement contributes another advantage through the greater efficiency of a high fineness ratio, which we

are only able to take advantage of because of the broad beam of the whole configuration.

Speeds up to 50 mph should be possible with a larger engine of perhaps an .09 displacement, and yet maintain stability on the water in fair weather. Should you be contemplating such an endeavor it might also be advisable to add a trim tab to the trailing edge of one wing panel. The torque of the propeller had no noticeable effect on the boat, a fact which could undoubtedly be contributed to the broad beam. From our observations it appeared unlikely that torque would pose any problem even for the larger displacement engines recommended.

Construction of the model is simple and straightforward. The procedure for making the main hull is illustrated in the sketches. The engine nacelle which is simple follows the same basic procedure. The notched hull sides to which the bulkheads are cemented and locked in place insures a more correct alignment of all the surfaces. Select your wood with care according to the specifications given and if you contemplate using an engine of .065 or larger, slightly harder grades of balsa or even veneer might be advisable.

The wing surface is constructed in a manner similar to many control-line

model airplane wings. Since the airfoil section is symmetrical it will be essential during construction to prop up the leading and trailing edges to obtain the correct airfoil shape. Once the basic framework has been completed and the wing sheeting applied to the top and bottom where indicated, cover the entire wing with lightweight silk. It would be best to apply the silk wet, but do not pull it too taut or it will tend to warp the wing structure.

Unless you are contemplating using a diesel or ignition-type engine (shades of 1940!), use fuel proof dope throughout. We found six coats to be more than sufficient to waterproof the model. One coat more or less depending on the consistency should square things up fine. Also remember to sand between each coat with No. 400 wet-dry paper for a smoother finish.

There is not much we can say about running your *Wingless Wonder* because there are no tricks of the trade to apply. Just wind up that engine and set her down in the water pointed in the direction you want her to go—and away she'll ride, but fast!

Bill of Materials

(Balsa unless otherwise specified)

8— $1/16"$ x $3"$ x $36"$, hull sides, top, bottom and bulkheads; nacelle bulkheads, wing ribs. 1— $3/32"$ x $3"$ x $36"$, nacelle sides and top; fins and sub-rudders. 3— $1/32"$ x $3"$ x $18"$, wing sheeting on top

and bottom. 1— $1/4"$ x $1/4"$ x $18"$, wing leading edge. 1— $1/2"$ x $3/16"$ x $36"$, main wing spar. 1— $1/4"$ x $1/8"$ x $18"$, rear wing spar. 1— $3/16"$ x $2"$ x $18"$, wing trailing edge.

$3/32"$ plywood; balsa blocks; celluloid; silk; $1/4"$ diameter spinner; cement; fuel proof dope and paint; nuts and bolts; .035 to .09 engine.

BIGGER "WONDERS"!

So much enthusiasm has been generated around our neighborhood since this airboat made its initial appearance, perhaps a word or two about larger sized "Wonders" would be in order.

As the plans now stand, with an engine from .035 to .09 you construct a hull of 29 inch length and a "wing" of 16 inch span. For powerplants in the .15 to .19 category enlarge the plans one-quarter to give a length of $36 1/4$ inches and a span of 20 inches. Easiest way to figure all your new measurements is to change the graphic scale to read 10 where it now shows 8, 5 where it now shows 4, etc.

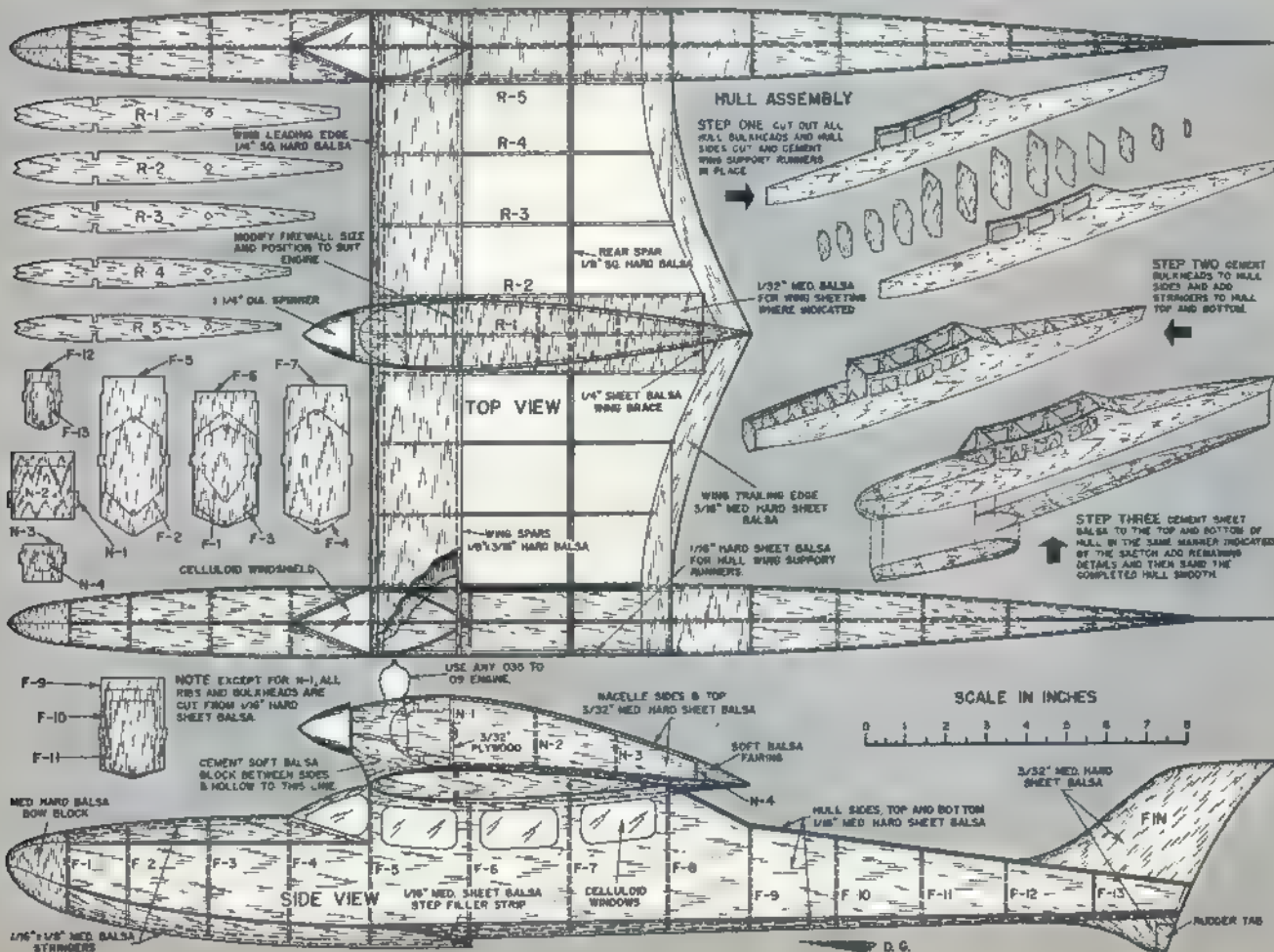
For powerplants in the .29 to .35 range enlarge the plans one-half, making the hulls $43 1/2$ inches long and the wing 24 inches. Your graphic scale can be changed to 12 where it now reads 8.

If you've got an old .51 to .65 engine around, drag it out and construct a double-size *Wingless Wonder*—that should really stir up the crowd! In all of these remember to maintain that symmetrical wing section at a slight negative angle.



Smile of satisfaction is registered by PDG as *Wingless Wonder* gets going on first run.

Full-size plans for *Wingless Wonder* are a part of Group Plan #455 from Hobby Helpers, 770 Hunts Point Ave., New York 59, N.Y. (50¢)



Bowie's Big Knife



James Bowie, adventurer and pioneer, gave knife its wide fame.

■ James Bowie was born in Georgia in 1799 and moved to Louisiana in 1802 where he is alleged to have begun his illustrious career working with Jean Lafitte and his band of pirates and smugglers. Bowie became a renowned American pioneer and adventurer and his fame as a knife-fighter was widespread. In 1828 he settled in Texas, then a part of Mexico, and during the

from Texas to Arkansas, having heard of an exceptional blacksmith there. He found James Black, the knife-maker in Washington, Arkansas, and ordered a special knife from him. Black listened to Bowie's idea of the ideal fighting-knife and then designed and forged the first "Bowie." Bowie's exploits soon gave the knife and the man undying fame, while Black lived the rest of his life in obscurity and died penniless and unknown.

Prior to his meeting with Bowie, James Black had been kept busy in his backwoods shop turning out knives for the Texas-bound frontiersmen. His popularity at the time was due to his excellent craftsmanship and more, to his secret process for tempering and hardening the steel which he used.

that in the intervening years he had forgotten the formula and the strain of trying to recall the intricate process destroyed his mind.

The first and original "Bowie knife" was a weapon designed solely for fighting. Its specifications must be largely inferred from records and accounts of the time. The blade was about 14 inches long, 1½ inches wide and ¾ inch thick, single edged to the curve of the point, where both edges were sharpened to a razor edge. On the back of the blade was a hardened brass fighting-guard used to parry the blows of an opponent. The hilt was protected by a steel cross-guard. The hilt or handle was seasoned black walnut, made in one piece which fitted over the tang of the blade.

Texas revolution he fought in most of the great battles. Bowie was at the Alamo when he contracted pneumonia. When the Alamo fell on March 6, 1836, he was killed on his cot by Mexican soldiers. With him when he died was his famous "Bowie knife." Contrary to popular belief James Bowie did not design or make the knife that was to render his name famous. In 1830 Bowie came

Soon after he made the knife for James Bowie, Black was tragically blinded and then found himself cheated out of his home and fortune by a vengeful father-in-law. He lived the rest of his life in the home of his friend, Dr. Isaac Jones.

Shortly before his death, Black attempted to pass on to Dr. Jones' son his secret for tempering steel, but he found

Many of the knives made by James Black followed the original Bowie pattern and have been called "Bowie knives," as have the many imitations. Collectors have claimed to own the original "Bowie knife," but in all probability the famous knife was destroyed with James Bowie's body by Mexican soldiers after the battle of the Alamo.

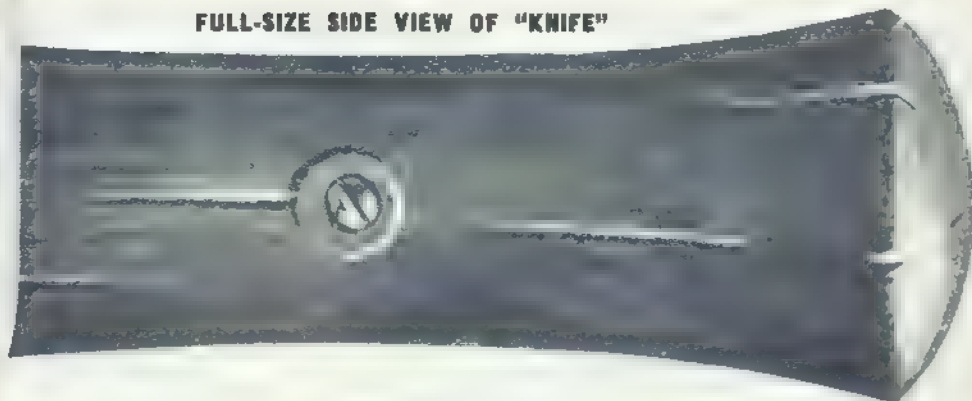
—James M. Triggs

**BOWIE
KNIFE
HALF-SIZE**



In a backwoods Arkansas workshop, James Black forged the first Bowie knife. His secret of tempering its steel died with him.

FULL-SIZE SIDE VIEW OF "KNIFE"



Above: cross-guard, half-size. Right: rough forging with cross-guard welded to blade.



How to Finish
The Model
Boat

Although balsa is easy to work with, it's one of the hardest materials to fill and color properly. Walt has tips including data on finishing mahogany



Mahogany veneer covered hull of glow plug engine powered radio controlled cabin cruiser was painted with Testors Butyrate dope. Sanding Sealer was liberally applied to smooth surface for finish. Interior structure is sheeted over with balsa and thoroughly fuel proofed so surfaces can be cleaned easily of any fuel that might be splashed about. Author says a well constructed boat model "should last a lifetime."

Secrets of Model Boat Finishing

By WALTER A. MUSCIANO



■ Throughout the scores of centuries that model boats have been built for pleasure or technical reasons the finish has always presented a challenge. Numerous model builders have spent countless hours developing their handiwork into a work of art only to ruin it with a faulty paint job. Actually there is no substantial reason for this difficulty. It appears that this problem is caused by the fact that too many model builders rely upon the color to cover the wood grain and construction blemishes when actually the color is only meant to do just that: color.

In view of the variety of materials used to construct model boats, numerous finishing methods are used. In all the finishing procedures, however, the

secret of success is in the sealing of the wood preparatory to applying the final color or finish.

Up until now the most popular material used for ship model construction by the world's model builders has been a medium to soft wood. This material is easy to cut to shape but is very porous and therefore difficult to seal if not processed correctly. Operating models that are constructed of wood must be well finished in order to protect the hull from the ravages of water. This will seep into the smallest crack and swell the wood, causing cracks and making the paint and filler chip off. Water will ruin the appearance as well as the operation of a poorly finished model boat. Wood is a living thing and is not consistent in hardness, grain or weight. This makes it difficult to determine precisely the number of coats of sealer required for all models in general. In this discussion we shall describe the various procedures we have used to achieve smooth, unblemished finishes on ship models, both operating and exhibition types, constructed of various woods.

Before we begin sealing the grain it is important first to make clear that only the bare hull should be treated. Never attempt to complete the model with superstructure, rails, masts, etc. and then expect to begin applying the sealer. It cannot be done. First, completely seal and finish the hull. This is followed by the superstructure which is filled in the same manner and, when complete, this is attached to the previously finished hull. Rails, lifeboats and the like are then installed.

Balsa wood, universally used by modelers everywhere for model building in general because of its good cutting qualities, is one of the most difficult woods to

Steam powered replica of a Staten Island ferry boat uses sheet brass boiler "uptake." This directs moist-hot gases away from superstructure sides and up through smokestack, thereby protecting finish from twisting, cracking and bending. Some of the larger boilers and more confined installations require that insulation and aluminum foil be applied to the superstructure and hull interior.

seal. The following procedure can be used for any type of balsa hull whether it be carved from a block, planked, sheet covered, or bread and butter sandwiched. When construction of the hull is complete it should be sandpapered very smooth with 3/0 or very fine sandpaper. Any small cracks between the planking or balsa blocks or blemishes or grooves in the surface of the hull must be filled in before any sealer or filler is applied.

Never use Plastic Wood to fill these holes. This product dries to a hard finish and it is virtually impossible to sandpaper it flush with the balsa hull. It is recommended that a preparation especially formulated for use on balsa wood be used to seal up these small crevices. Aero Gloss Plastic Balsa and Testors Fyll have been used on our models with excellent results. Each is best applied with the fingers and should be pushed into the crevices and hollows in order to insure a thorough filling of the holes. It is advisable to apply a bit of extra Fyll or Plastic Balsa and when this is dry it can be easily sanded flush with the wood. These products are excellent for molding the bossing around the propeller stern tubes as well as numerous other fairings.

Using a good quality flat camel hair brush about $\frac{3}{8}$ " wide, brush on two coats of a good grade grain filling solution such as "Aero Gloss Balsa Filler Coat," "Aristocraft Wood Filler" or "Testors Sanding Sealer." Be certain to allow the first coat to dry thoroughly before the second one is applied. When this second coat is completely dry, after about thirty minutes, sandpaper the hull thoroughly with 3/0 sandpaper. Sand right down almost to the wood in order to level off the filling solution coats and the filled-in pores. It is necessary to replace your piece of sandpaper often because the filler may cake on the sand and cause scratches on the hull. We cut our sandpaper into three inch square pieces and do not use a block except for very flat surfaces such as decks, etc.

Now, apply another coat of the sealing solution. All applications should be flowed on liberally and should not be sandpapered until thoroughly dry. Sandpaper again with 3/0 sandpaper, very lightly this time. Repeat this procedure three or four times, sanding thoroughly



Steam powered 4" natural mahogany finish model "Filled" with several coats of Firzite as a wood grain sealer; final coats are slightly thinned fine grade spar varnish.

but lightly after each coat is dry.

Using the correct thinner for the sealer you are applying, either fuel proof or regular acetone, thin the sealing solution about 10 percent and apply four more coats. Do not sand after each coat. When dry, the last coat can be sanded wet. Use 8/0 wet sandpaper very lightly. Thin out the sealer an additional five percent and flow on three more coats of the filler or sealer. Sand these very lightly with the wet 8/0 sandpaper.

By this time the hull surface should be as smooth as glass. If not, continue applying the thinned-out filler with light sandings between coats until a smooth finish is obtained. Never use wet sandpaper if there is a danger of having an insufficient amount of sealer on the model because the water from the sandpaper will seep into the unprotected wood and ruin the finish. Keep the sandpaper wet by dipping it into a pan of water. Wipe the wet residue from the model with a

soft cloth each time.

The color can now be applied. Do not perform this operation until the model hull is absolutely dry from the wet sandpapering. Either brush or spray the color on. It is advisable to use the same type of dope as the wood sealer already applied. Either fuel proof or regular dope can be used, and again we recommend Aero Gloss, Aristocraft, or Testors as these products have been used by us with much success. For brushing use a good grade camel or sable hair brush about $\frac{3}{8}$ " wide. Always clean the brushes immediately afterward.

Apply the lightest color first followed by those that are progressively darker. Brush on, or should we say "flow on," the first two coats of dope as it comes in the jar or can. Dope dries very quickly, as any model plane builder will tell you, so do not try to brush out the color. Apply it liberally and no brush marks will remain after it (Continued on page 63)



The pine hull of this model of the cargo vessel "Robin Kirk" is painted with Aero Gloss model dope. Five undercoats of thinned Filler Coat were well sanded to provide a glass-smooth

foundation for the color. Four coats of color were brushed on with a $\frac{3}{8}$ " camel hair brush. This water-line replica is not a working model but is used for full-scale engineering studies.

RADIO CONTROL SEMI-SCALE AMPHIBIAN:



Ken's Dreamboat

By KEN WILLARD



Author-designer Willard shows how you can fly his Dreamboat over land *without* gear!

Ample fuselage proportions will be applauded by radio modelers; a real tough character, it'll survive crashes

■ *Dreamboat* was designed with the idea of having a simply constructed, radio-controlled amphibious or straight flying boat. It is very easy to build, especially if you use Frank Zaic's 50" wing-stab kit, which fits the design perfectly. Whether you're new at radio control or an old hand, this model will answer your desire for something "different," yet it performs the contest pattern like a veteran. The water take-offs are really thrilling to watch, and if you should go to a .14 or .15 engine in place of the .09, be

ready for some truly fast action in the air.

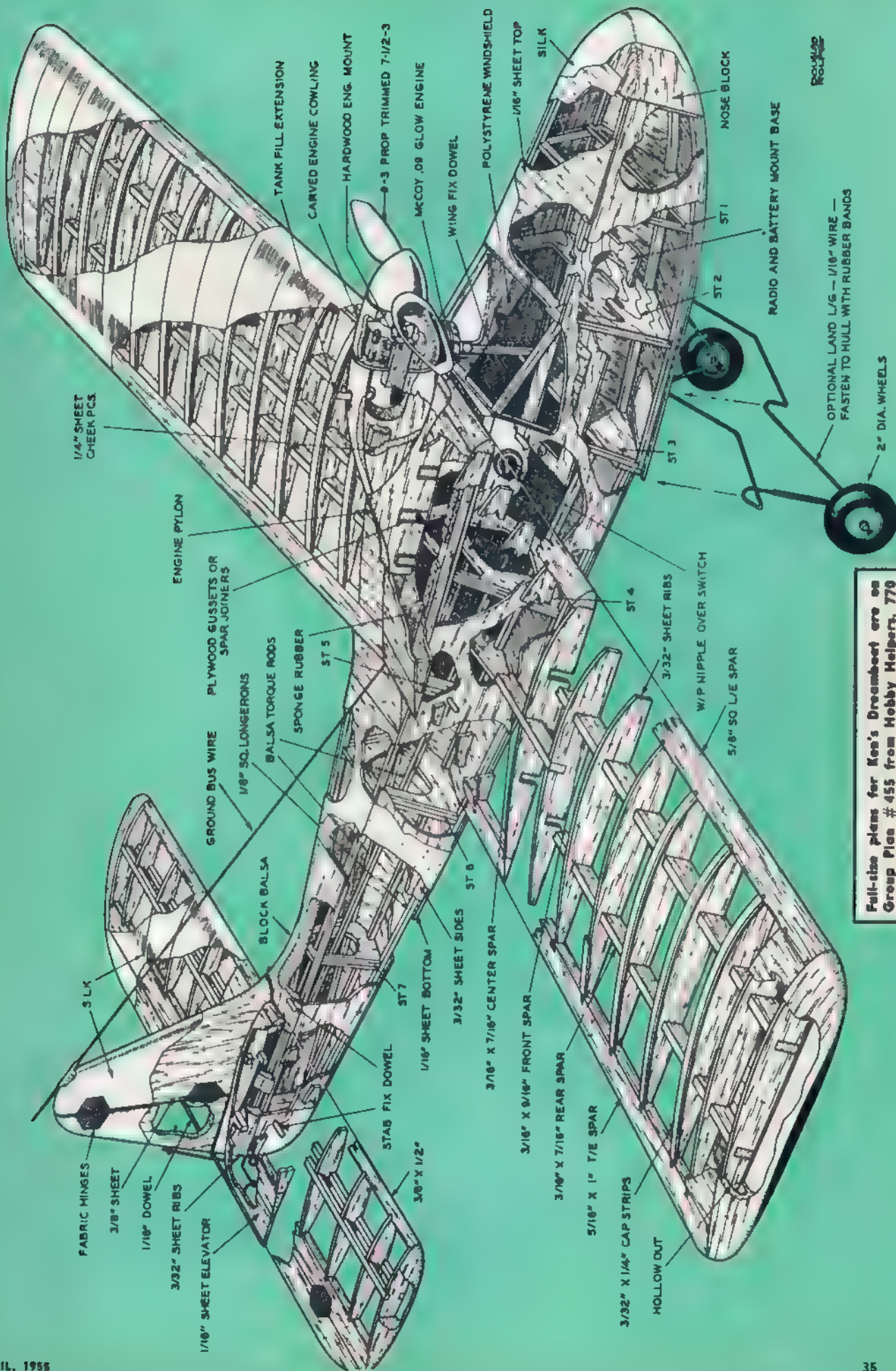
Aerobatics are quite in order for the experienced flyer. The up-elevator gimmick on the Bonner compound escapement works like a charm, and also makes the water landings really beautiful.

The model weighs three pounds with landing gear attached, which gives a wing loading of 16 ounces. This yields a flying speed right around 25 mph if you assume a 4 deg. angle of attack. It handles the wind very well, but don't try

In flight shot (top of page) tail wheel, temporary test unit, was found unneeded. Detachable gear in final form is illustrated here.

Dreamboat afloat is a study in shadows—one on the water, another on the bottom of the pool. Author works with Marquardt Aircraft.



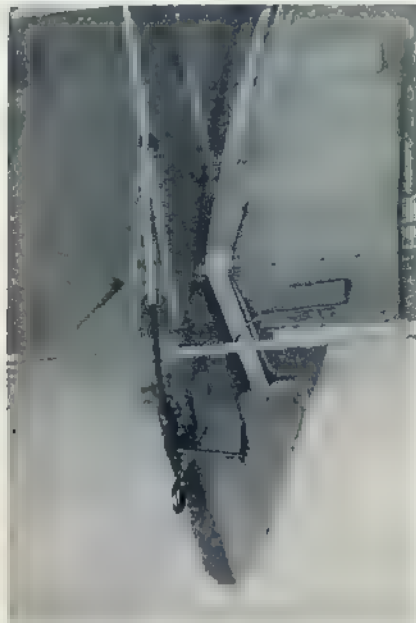


Full-size plans for Ken's Dreamboat are on Group Plan # 455 from Hobby Helpers, 770 Hunts Point Ave., New York City 59 (50¢).

KEN'S DREAMBOAT



Bonner compound; left torque rod operates elevator between 2nd and 3rd position.



Tail controls: holes where rods emerge from the hull are greased for waterproofing.

water take-offs if the waves get over two inches high unless you have a .14 installed. The K & B .15 will have to be plugged way down if you use it, otherwise you're in for a busy time controlling the loops. The photos show a .15, but a McCoy .09 replaced it after the first couple of flights because the .15 has too much power for normal flying.

A quick removable package of the Babcock radio and batteries simplifies servicing. It also makes the balancing job very easy when you change from sea to land flying.

Construction of the wing, stab, and engine pylon is straightforward and conventional, and will give little trouble.

You can build your own wing and stab from the plans or you can save time by using one of Frank Zaic's 50" wing-stab kits (put out by Model Aircraft Control Co.).

The fin, rudder, and elevators are made from medium-soft balsa. Note how the trailing edge stock on the stab is cut off so the elevators can be mounted with the cloth hinges.

The engine pylon is made from medium hard balsa.

If 5" x 3/32" x 36" medium balsa sheets are available, make the hull sides out of one piece each; if not, then butt-glue two pieces together for each side, one 3" x 3/32" x 36", and the other 2" x 3/32" x 36".

Glue the 1/8" x 1/8" hard balsa longerons and uprights to the sides, and you're ready to start the hull assembly. Start the assembly by gluing the plywood bulkheads, #2 and #4, in place, carefully lining them up so they are square with the longitudinal axis. Next glue the tail block in place, pulling the sides together at the tail, and making sure the inward curve is the same on both sides. Incidentally, since the hull sides are slanted, this curve results in a slight concavity to the bottom of the hull aft of the step which seems to improve the planing characteristics.

Carve the base block for the fin to shape, and hollow it out enough to let the torque rods run freely through to the rear. You can make the tail plug for the escapement rubber now or later, as you please.

Now is a good time to install the escapement and torque rods, because you have the hull lined up, and still can get

inside easily to mount the equipment. If you use balsa torque rods, with wire ends bound and glued to them, you will have to use a long ground bus wire, running up forward, for the radio ground plane. If you use 1/16" wire torque rods, they will serve as a ground plane and eliminate the need for the long ground bus.

Next you can put in the cross-bracing at the step, glue the noseblock in place, and finish the cross-bracing at the other stations. Put the keel stock in, add the hardwood block for the retaining screw on the radio base to screw into, glue the dowels for the wing, tail, and cabin braces in place, and you're ready to cover the top and bottom. Before that, though, mount your radio (not necessarily with wiring harness) and check the hull finally for fit, both radio and escapement, and then cover the top and bottom with sheet balsa. You can make any minor adjustments in spacing or alignment at this time.

Cover the bottom of the hull first so you can get inside and run a bead of glue around all the joining surfaces after they are dry. This both adds strength and improves the waterproofing.

Now cover the top, leaving the access hole for the receiver uncovered. Add the dihedral runners to each side so the center section of the wing cradles snugly in place, put the cross braces in and tailor the wing cradle to fit the wing.

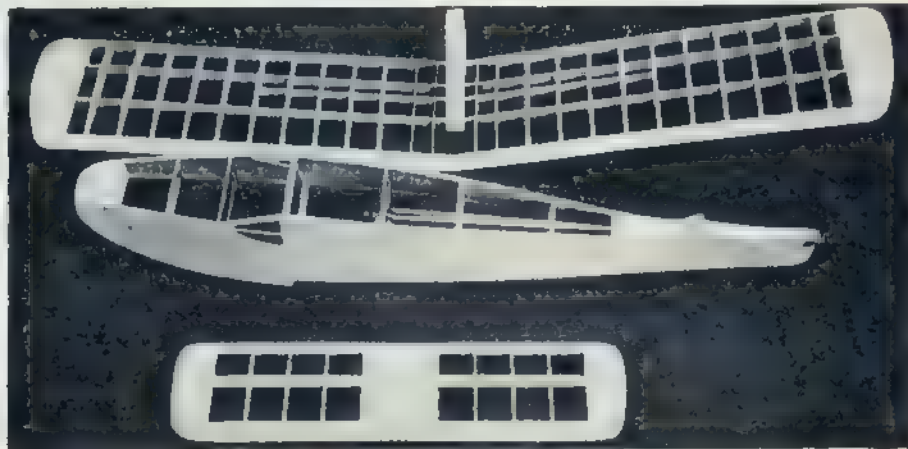
Start the outer covering by using fiberglass on the forward part of the hull bottom. This adds a lot of strength where it is needed most.

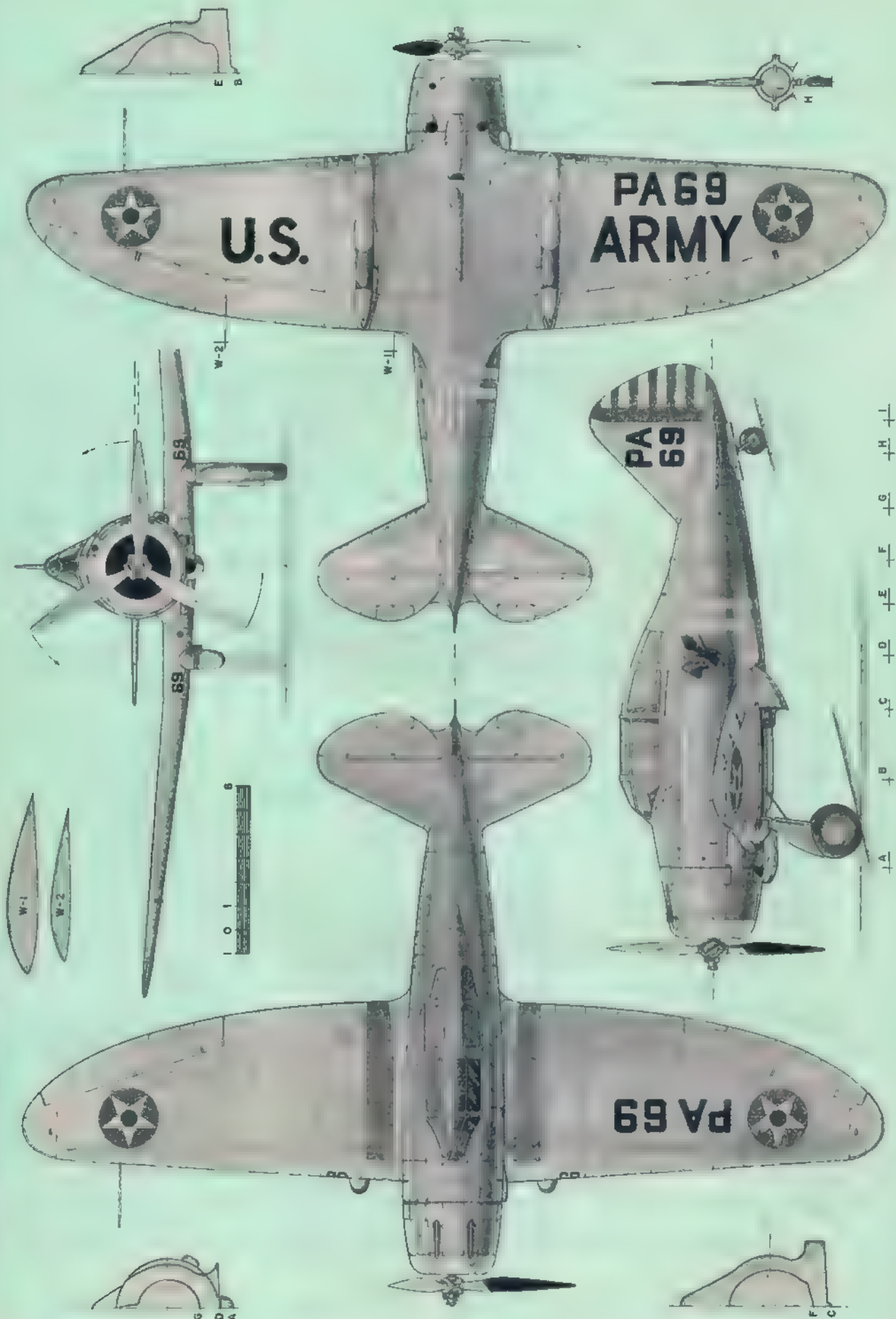
Cover the model completely with colored silk, and finish it with clear nitrate dope—five or six coats, thinned down a little and plasticized with a few drops of castor oil. The wet silk technique works very well on the wing and stab; just brush the dry silk in place on the hull, fin and elevators. Hot fuel proofer finishes job.

If you can get some .015 polystyrene sheet for the cabin windshield, it does a very good job. It is impervious to hot fuels, and with the engine where it is, a lot of fuel drips onto the windshield. Plastic cement will hold the windshield in place; when this dries, run a bead of 3M rubber cement over that to improve waterproofing. Fuel-proof over the 3M cement.

Get some (Continued on page 67)

Ken shows you how very broad is the beam of this flying hull. Wing and stab can be made directly from Frank Zaic's parts set if desired.





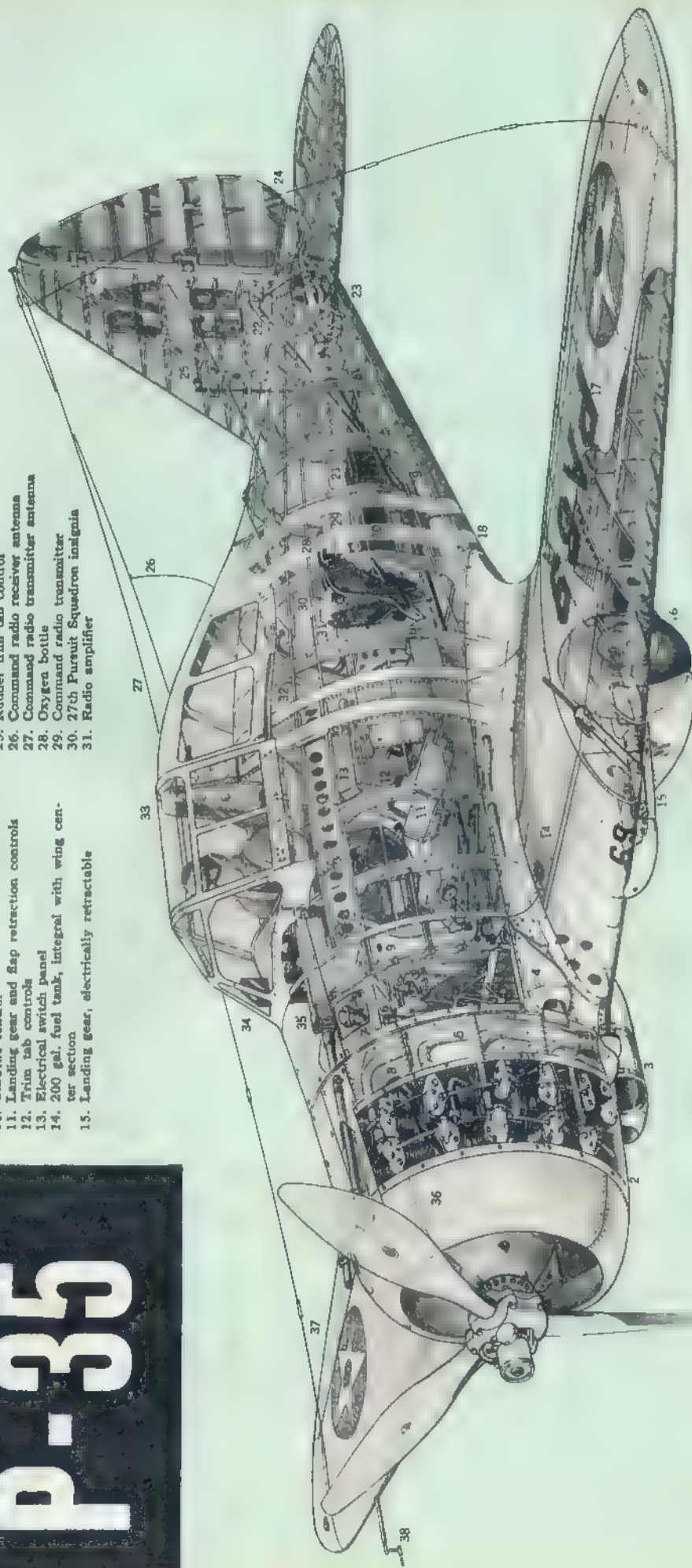
SEVERSKY

P-35

1. 3-blade Hamilton Standard constant-speed propeller, 10' 6" diam
2. Pratt and Whitney R-1830-9
3. Oil cooler
4. Carburetor air intake
5. Staminex steel exhaust manifold collector ring
6. Engine controls
7. Oil tank, 12 gal.
8. Cowl flaps
9. Ammunition boxes
10. Throttle control
11. Landing gear and flap retraction controls
12. Trim tab controls
13. Electrical switch panel
14. 200 gal. fuel tank, integral with wing center section
15. Landing gear, electrically retractable

16. Mayes wheels and 27" smooth contour tires
17. First Pursuit Group identification markings
18. Double 9" white stripes, squadron commander (originally white, then yellow)
19. 2 flare racks
20. Command radio receiver
21. Battery
22. Elevator control rod
23. Tail wheel, electrically retractable
24. Stainless steel structure, fabric-covered control surfaces
25. Rudder trim tab control
26. Command radio receiver antenna
27. Command radio transmitter antenna
28. Oxygen bottle
29. Command radio transmitter
30. 27th Pursuit Squadron insignia
31. Radio amplifier

32. Baggage compartment door, right side
33. Padded headrest and overturn structure
34. Electric gunlight
35. 30 cal. machine guns (2)
36. White squadron identification color band on nose cowl (originally white, then yellow)
37. Stainless steel structure, fabric covered aileron
38. Pitot tube



Ancestor to the P-47 Thunderbolt of War II fame, the P-35 was the last word in modern fighters in 1937 and the first military all-metal single-seater with retractable landing gear capable of speeds in the neighborhood of 300 mph. Powered by a 950 hp Double-Wasp engine, it was produced by Seversky Aircraft Corp. Major Seversky's first venture in aircraft design was the highly successful SEV-2PA amphibian which had

a close resemblance to the P-35, but was mounted on special pivoting amphibious floats. With this amphibian the Major established a number of impressive speed records. In its civilian version, the P-35, known as EP-1, was flown by such famous pilots as Frank Fuller, Jr., Jacqueline Cochran and Jimmy Doolittle. In the hands of Fuller and Miss Cochran it thrice won the Bendix Transcontinental Air Race—in 1937, 1938, 1939.

In total, some 75 P-35s were delivered to U.S.A.A.F. by 1939 when Seversky Aircraft Corp. was acquired by Republic Aviation Corp. R.A.C. produced a number of P-35A type fighters, main difference consisting of more powerful, 1200 hp engine, slightly longer fuselage and 300 mph-plus speeds. (Markings shown are for C.O.'s plane "PA69," 27th Pursuit Squadron, 1st Pursuit Group, Selfridge Field. Span, 36'; length, 25' 4".)



New York State College of Ceramics, Alfred University

Student performing an experiment in glass technology. In manufacture, temperatures required to melt glass reach white-hot 2700 degrees F.

Broad New Horizons Open Up For the Ceramic Engineer!

If you think "ceramics" means mainly pottery, you don't know about use in jets and many other phases of today's living. They need 400% more engineers!

■ Before starting on the tour, we'd like to have you meet our friend Dink. There he is still in bed late this Saturday morning, putting off the decision as long as possible. His problem: the gal friend Susie, whom he usually refers to simply as "N.G." (Neanderthal Girl), has given him an ultimatum. Either he goes with her to attend the craft course in ceramics that begins today at the Community Center, or they are through forever. "N.G." believes she might be utterly interested in the whole subject of ceramics, and insists that Dink needs broadening. Even prospective engineers, she says, can become one-sided.

Ceramics! now says Dink to himself bitterly. *Little cups and saucers.* Eyes half closed, he gropes his way along the wall to the bath, uses up ten more minutes in adjusting a balky fluorescent lamp. In the kitchen he opens the refrigerator, pours three glasses of orange juice, reaches

for a plate of cheese, then rushes for his binoculars as a low-flying jet is heard. In the living room he checks the weatherman on television.

Little bowls and ashtrays! . . . Tell her Mom wants me today? Naw, I'm sixteen. Outdoors, he investigates a spot on the cement step, examines a small crack in the bricks, sharpens his knife on the grinder in the garage, and gets rid of fifteen more minutes fiddling with the spark plugs of his jalopy at the curb. For once the engine catches first time, and Dink stops his own running.

I won't do it! I'm not interested in little pieces of decorated tile like they made in ancient history! I only go for what's going on now, and I'll wait for her outside and that's all! Ceramics! . . .

Real cool, that Dink. But he missed something. What he didn't realize was that practically everything he touched was or contained a ceramic product. The plas-

ter of the wall, fluorescent lamp, porcelain enamel of refrigerator, glass tumbler, china plate, binocular lenses, TV picture tube, cement, brick, grinding wheel, spark plug—all these are part of the ceramics field. What he also didn't know is that industries making such products require the services of ceramic engineers, and that the opportunities ahead for such trained technologists are tremendous.

Today ceramics is a five billion dollar manufacturing business in this country, employing in all its branches about 400,000 people in more than 5,000 plants. At present a total of hardly more than 1,000 persons is enrolled in college ceramic courses, with a mere 200 graduates coming out each year to fill the needs of the industry. To show the extent of that need, they cite figures concerning the University of Illinois, which has a well-esteemed department of ceramics.

In the six months preceding graduation last year, the school received 95 requests from prospective employers for ceramic engineers. There were only four such graduates. Three of these decided to take graduate courses. The fourth leafed through the 95 requests at his leisure, finally accepted one offering him more than \$100 per week to start. (This year, the average starting salary for engineering grads of all kinds will be \$361.) In general, estimates indicate that a bare 25-30 per cent of the ceramic engineers required will be graduated in the next four years.

How come such a weird state of affairs? A chief reason is just plain ignorance about ceramics and its opportunities. Technical advances in such broad fields as electronics and organic chemistry have been more spectacular, received more at-



Pennsylvania State College (courtesy Pa. Ceramics Assoc.)

It takes science, every step of the way. In this ceramics lab a future engineer makes direct observation of high-temperature reactions.

tion, and many young fellows haven't thought about ceramics. Yet the fact remains that this industry has been expanding rapidly; in the war years alone it increased 61%. New developments are going on apace, new applications being found constantly. You may have heard that refractory ceramic liners are used in today's jet engines, to keep the metal from melting from the intense heat involved. Did you also know that ceramics are being investigated for vital use in atomic energy reactors, for tomorrow's power-plants?

That's what this tour is all about, to show what ceramics means and the opportunities ahead. We'll visit laboratories, schools, plants, mines and wherever.

First, let's get rid of the popular misconception to the effect that "ceramics" means just pottery and clay products in general. Ceramics refers to products made from all kinds of earth materials which are neither metals nor fuels, such as sand, clay and crushed rock of different constituents, that have been subjected to high temperatures as the main part of the process.

The term "ceramist" takes in several fields of study, includes several careers designations. You can train to be a ceramic engineer, a ceramic technologist, a glass technologist, or a ceramic designer. The ceramist in general must know the properties of all nonmetallic minerals, how they behave when the high temperatures are applied, how to make articles from these earth substances, and what the properties of those articles are. He must know how to prepare the minerals, free them from impurities if necessary so that the end product can be manufactured economically and do its job.

The list of individual industries engaged in ceramics is an imposing one. They include the manufacturers of glass of all kinds, abrasives (whether Dink's little bench wheel, scouring powders or grinders in manufacturing), whitewares (dinnerware, wall tile, etc.), structural clay products such as building brick and sewer pipe, vitreous porcelain enamels—for coating items that range from the family refrigerator to the front of your favorite diner, refractories, and the special ceramic products which come under the

heading of lime, plaster and cement.

Been stumbling over that word "refractory"? A refractory is a heat-resistant material, one that won't fuse at high temperatures, and its purpose is to save heat.

Fashioned in bricks, blocks and other forms from fireclay and different combinations of basic earth materials like alumina and silica, it is used to line furnaces, boilers, chimneys and the like. Manufacturing in this country couldn't do without it.

The steel industry, for instance, needs refractories to line the inside of the big open-hearth furnaces where pig iron is cooked to a molten mass at nearly 3300 degrees F. The more such refractories can stand the gaff, the more heat they can allow to be applied without upping the cooking time, the cheaper the cost of making steel. That's why ceramic technologists are experimenting with new formulas and processes for new refractories. Just one example of opportunity for research in ceramics.

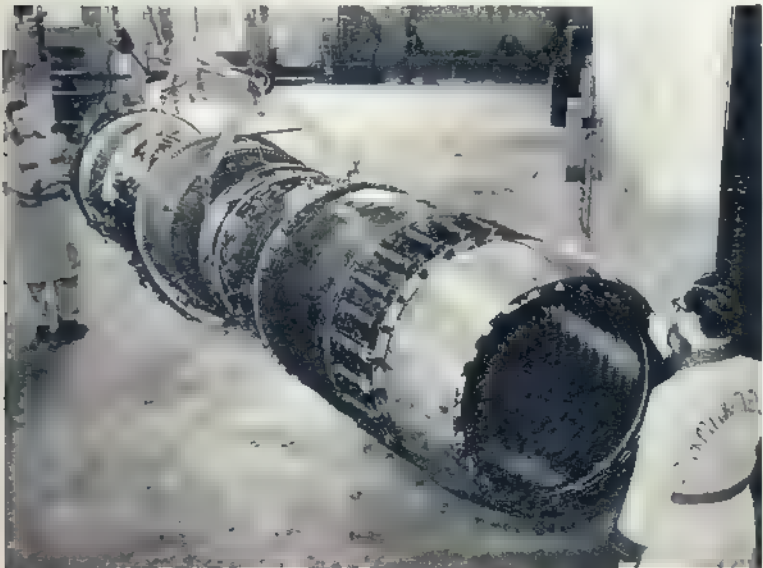
Don't confuse fireclay with the ordinary kinds of clay (Continued on page 72)



Pittsburgh Plate Glass Co. (courtesy Ceramics Industry Magazine)

Synchronized conveying rolls out perfect plate glass—but behind that perfection is the trained technologist, needed by every ceramic firm.

New use of ceramics is that of refractory coatings in jet engines, to protect metal from heat and corrosion. Here: P&W J-57 turbojet.



P Pratt & Whitney Aircraft
APRIL, 1955

The mining of clay is an important first step in the creation of many ceramic products, but practically all earth elements are used.



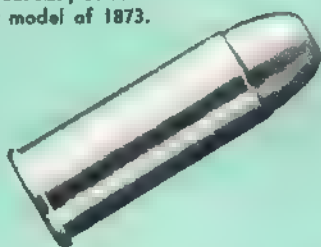
Elliot Lyman Fisher (courtesy Ceramics Industry Magazine)

The Colt Peacemaker

By J. M. TRIGGS

Historically one of the most significant weapons, this revolver has been in all U.S. battles since Custer's Last Stand

.45 cal. cartridge (actual size) as used in single-action Army model of 1873.



Full-size drawing of Colt "Peacemaker."

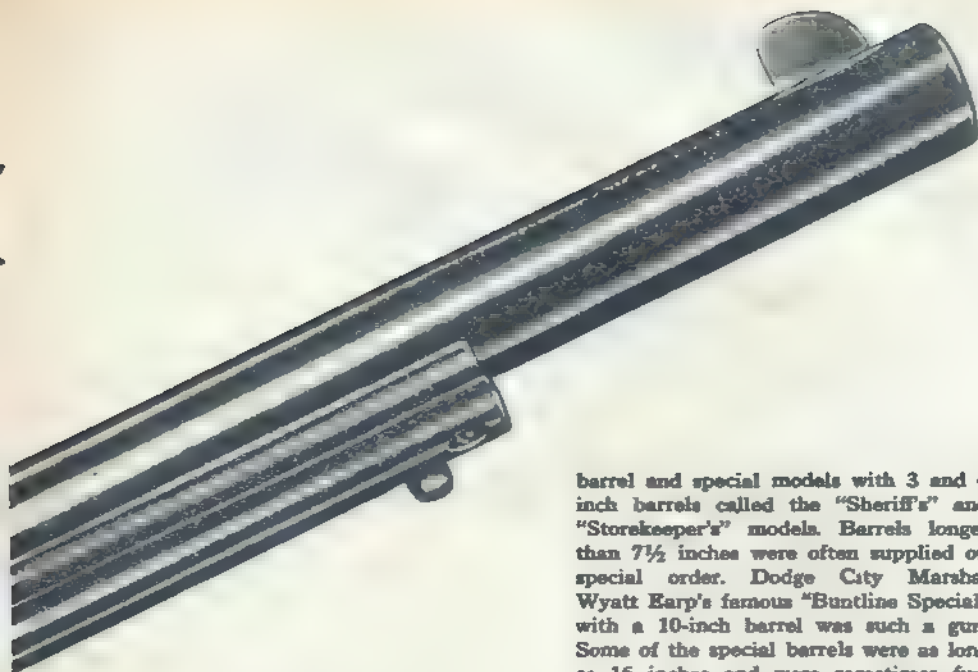
■ Probably the best-known firearm in American history is the Colt single-action Army revolver, model of 1873. Designed and developed in 1872, ten years after Samuel Colt's death, and introduced in 1873, the Peacemaker became the most popular revolver ever made.

In the cattle-driving days of the old West, the Peacemaker was so widely used that it could be classed as an item of wearing apparel. Names like Wyatt Earp, Bat Masterson, Wild Bill Hickok, Billy the Kid, Pat Garrett and Buffalo Bill are closely connected with the Peacemaker. These were the days when history was written with sixshooters. The gun is not without its modern fame too. The famous General George S. Patton carried a pair of engraved, ivory-handled Peacemakers throughout World War II, and in many sections of the country Colt Peacemakers are still in use today.

This gun has been known by many names, among them "plow handle," "hog leg," "thumb-buster" and "equalizer." The following description of the various models may clear up some of the confusion resulting from the many titles.

The Colt revolver, model of 1873 in .45 caliber, was the *Peacemaker*. This was the first metallic cartridge revolver adopted by the U.S. Army. Variations of the Peacemaker were the Cavalry model with 7½ inch barrel (shown here full size), the Artillery model with 5½ inch barrel, the Civilian model with 4¾ inch





barrel and special models with 3 and 4 inch barrels called the "Sheriff's" and "Storekeeper's" models. Barrels longer than 7½ inches were often supplied on special order. Dodge City Marshal Wyatt Earp's famous "Buntline Special" with a 10-inch barrel was such a gun. Some of the special barrels were as long as 16 inches and were sometimes furnished with a detachable shoulder-stock enabling the shooter to use his revolver as a carbine.

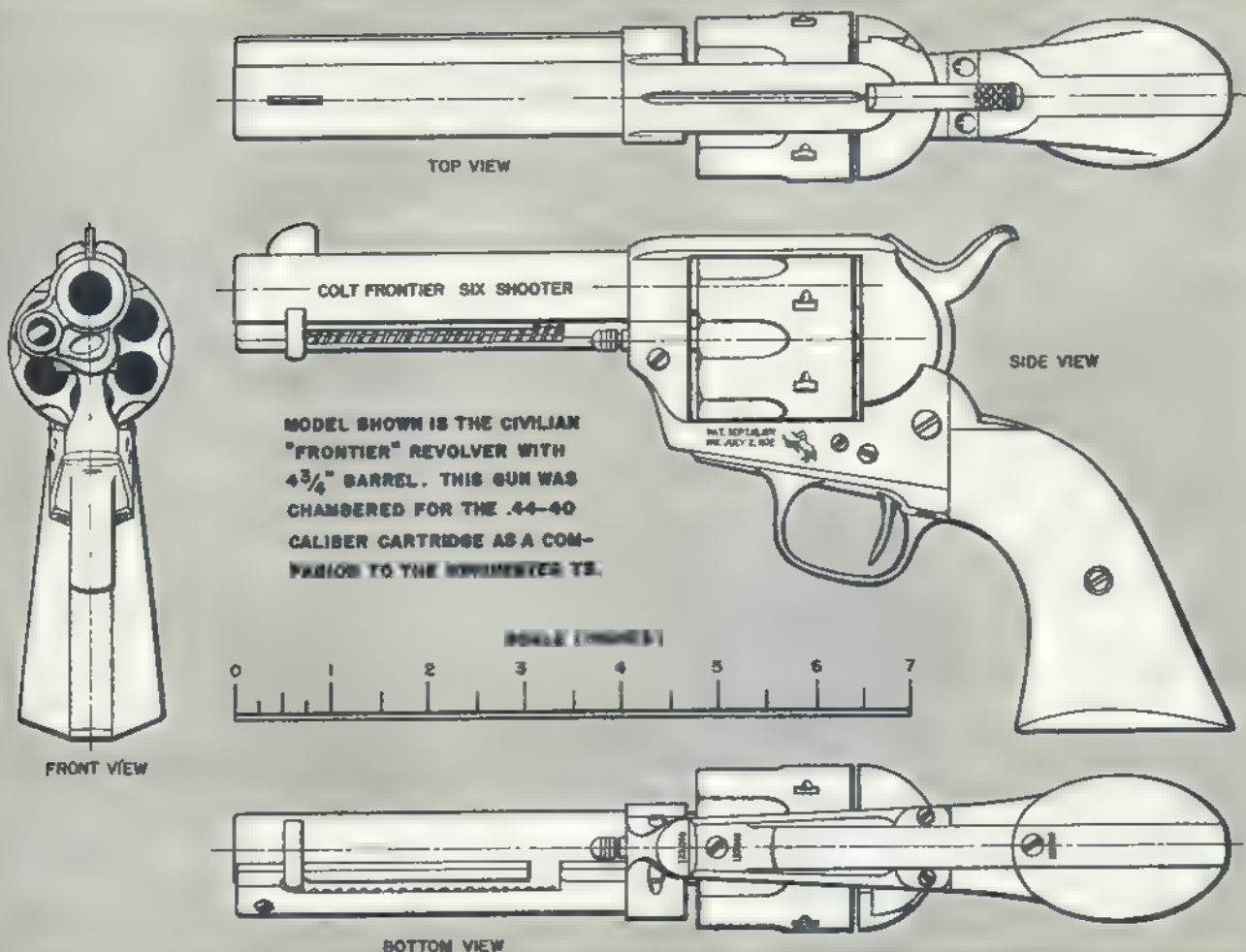
The *Frontier Six-Shooter* was identical to the *Peacemaker* in every way except

caliber. This gun was chambered for the .44-40 cartridge used in the Winchester 73 rifles and carbines. The "Frontier" was also available in the various barrel lengths already described. A civilian model "Frontier" with a 4¾ inch barrel is shown in the plans.

Known at the Colt factory as model "P," the *Peacemaker* was made from 1873 to 1941, enjoying the longest popularity of any American handgun. A total of over 350,000 model "P" revolvers were made, these being chambered for almost every commercial cartridge from .22 caliber to .476 Eley.

The Colt company stopped the manufacture of this gun in 1941 and the last *Peacemakers* on hand were sold to the British government for use in the anticipated invasion of England before the Battle of Britain turned the tide.

The *Peacemaker* has become a very desirable collector's item today, the prices of the fancier presentation models reaching as high as \$400 per gun. Even a worn-out and rusted pile of junk will bring at least \$60 if it is a genuine *Peacemaker* or *Frontier Six-Shooter*. It is interesting to note that the first *Peacemakers* were sold to the Army for \$13 each and a civilian could buy a *Frontier Six-Shooter* in 1888 for \$16.



HOBBY MODEL WORLD®

Bob Cameron making R/C boat run at
Puddingstone Dam, Calif. Macnabb 27¼.

Are we hearing from you? Is your club sending in news and photos?
This department is for everyone interested in planes, cars and
boats. Remember that we pay \$10 apiece for photographs used here!



Most Realistic Model—\$25 Award Winner

Splendid photo of J. R. Wait, Jr.'s 64" operating model of the USS Hobson walks off with this month's award. Shot made in Gulf of Mexico off Freeport, Texas. When you submit entries (can be planes, trains, boats or car models) be sure to include data on how you took the photo and what equipment was required.

THE DOPE CAN

AMA Reelects Storey. Elsewhere in this issue you will find the complete listing of the 1955 officers of the Academy of Model Aeronautics. Keith Storey of Pasadena, Calif., was again selected by the membership to lead the Academy as president; George J. Clingman of Indianapolis will again serve as secretary-treasurer. This is the third term served by both individuals.

More votes than ever before were cast by AMA'ers for these two and the eleven elected vice presidents, plus two contest board members from each of the Academy's 11 districts. If you have any need for help try your district v.p. first; your representative on the contest board can help you with rules and regulations.

AMA Loses Nichols. After nearly 13 years as a headquarters executive with the Academy of Model Aeronautics, Russell W. Nichols resigned to go into publicity work with a Detroit firm. Nichols had been executive director of the AMA for a longer period than anyone else—in fact, in its turbulent history the Academy has only had two paid directors. The first was Al Lewis, now ATH's editor; Nichols followed him.

Russ is the sort of fellow whom many folks are apt to overlook when the honors are passed out. Reason for this is he gets a great deal accomplished with very little noise. Those who have had the opportunity to observe organization person-



Stan Hill with home-made plastic tank mount for Mac diesel VTO. No doubt about fuel.
 Bob Wiehle's "Zaunkönig": full-span flaps and slots, fiberglass cowl, Mac diesel, 7/2 prop.



nel over a period of years felt that some big outfit would come along, recognize Russ' talents and grab him off for a big job. Well, that is exactly what has happened, but it was a long time in coming because Nichols passed up many fine opportunities until he was certain the AMA was operating on a substantial footing and could carry on without undue difficulties which might otherwise result from a major personnel change at an inopportune time.

A large number of individuals have volunteered their services for Academy activities both before and after Russ took over as executive director. In an organization such as the AMA progress is made only through the outside efforts of unpaid leaders; yet there must be a central guiding figure to coordinate the efforts of all and lend a feeling of continuity to programs and promotions. This Russ did, and much more effectively than most people realized.

For the first time in their varied history the National Model Airplane Championship competitions were taken over pretty much by AMA during Nichols' regime. As we've said before, credit must be shared by a number of individuals, but the fact remains that it was while Russ was serving at the AMA's national headquarters that the Navy began play-

ing host to model aviation contests, that the Air Force started its world-wide championships, that top-drawer sponsorship was secured for the Wakefield and F.A.I. gas championships, that American teams went abroad to represent us in international events, that the Academy's "Model Aviation" started going out to all the members, and so on down a remarkable list of AMA achievements.

About the best way to sum up Nichols' accomplishments is to say that he's the type of fellow you don't miss until he's gone. We're sure that many will share this feeling in the months to come. This is not meant to say that he cannot be re-



John Curry (right) and outboard R/C. Rudder proved ineffective, motor now moves.



~~Everett~~ Dry Lake, Calif., campers include (at left) Bob Holland and George Casselberry (with checkered wing) plus assorted Everetts.



Convair test pilot A. P. "Speed" Wilson and his hi-thrust Wasp with drooping fuselage.

placed. Not at all. We're certain the Academy officers and the parent National Aeronautic Association will agree on some well-qualified individual to serve as the new AMA executive director. It's just that no two individuals ever act alike in a position such as that and the new man will be doing things in his way, while Russ had his own methods.

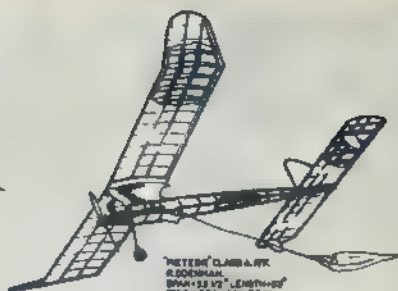
A salute, then, to Russ Nichols as he embarks on a new career and a hearty thanks on behalf of thousands of modelers across the country.

Latest Air-Model Records. While the AMA's Technical Director, Carl Wheelley, was in Paris attending a meeting of the Model Section of the international air-governing body (F.A.I.) our "Air Trails Model Annual" went to press with the then existing "Official A.M.A. National Model Aircraft Records." (Page 7 of the Model Annual now on sale nationally at newsstands, hobby shops or by mail.)

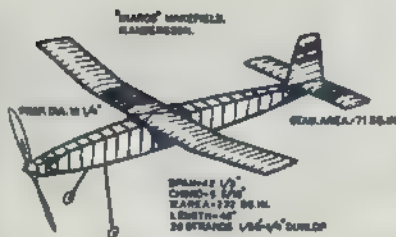
Upon his return Carl advised us of new records that were issued afterwards by the AMA Contest Board. If you've



LOOP 1/4 C TRAINER
R. ANDERSSON.
SPAN=20", LENGTH=18".
PROP. 0.0 DIESEL.



PETER'S CLASS A-77
R. ANDERSSON.
SPAN=12 1/2", LENGTH=10".
WING AREA=200 SQ. IN.
JET PULL DIESEL.



MARCO WRIGHTFIELD
R. ANDERSSON.



GRAY A-2 TORPEDO
R. ANDERSSON.
SPAN=14", LENGTH=31".
WING AREA=450 SQ. IN.
WEIGHT=15 LB.

got your copy of the new 1955 edition of the Model Annual handy you can substitute the following to give you an up-to-the-minute listing:

Left Column, 11th listing: C, Sr, 19:52.2, Original, Orwick .64, Bradford Broadwell, Long Beach, Cal. (Replaces Duane Eisenbeiss' 19:10.)

26th listing: 1/2 A, Sr, 13:25, Original, Space Bug, Joe F. Ziomek, Allen Park, Mich. (Replaces Lloyd Miles' 13:05.)

29th listing: AB, Sr, 16:30, Original, Torp .19, Nelson E. Itterly, Easton, Pa. (Replaces Jack Fotts' 15:22.6.)

Center column, 7th listing: B, Sr, 134.27, Original, Dooling .29, Charles V. Williams, Rensville, N. C. (Replaces Ken Hale's 131.05.)

12th listing: B, Jr, 24.03, Original by F. Cummings, Jr., Ronald Cummings, Harbor City,

Calif. (Replaces his own 21:08.2.)

Right Column, 2nd listing: Op, 5:53.4, Original, Thomas R. Quermann, Huntington Station, L.I., N.Y. (Replaces Carl Goldberg's 5:25.)

24th listing: Jr, 16:37.2, Original, Orville D. Denison, Long Beach, Cal. (Replaces William Schlarb's 11:57.6.)

Last listing: Op, 159.51, Original, Dyna-Jet, James D. Kira, Salina, Kan. (Replaces his own 154.98.)

If you'll keep your Model Annual handy through the year, we'll keep you posted on record changes. And this applies to not only model airplanes, but model speed boats and model race cars. Records for these activities are also listed in the '55 "MA".



Bill Terra pushes off while his sister Donna stands by with shot-off broom. She races, too.

Bouquet for Florida. The First annual King Orange International modelplane competition held the last three days of December at Mainside Field, U.S. Marine Corps Air Station, Miami, still has the boys talking. Experienced air-model meet contest goers all were enthusiastic over the way the meet was run, the prizes that were presented, and the accommodations that were provided in the way of housing and meals.

And hear this—the 2nd King Orange meet has already been tentatively scheduled for next Dec. 30 and 31, Jan. 1 and 2. The last competition drew flyers from such distant points as Kansas, Minnesota, Texas, New York and New England. The Cuban army flew in a team of modelers; Oregon was represented by Jim Walker.

This K.O. competition has no connection with the late series known as the Tangerine Internationals. Those were in a different locality and publicized a different kind of citrus fruit!

After the Tangerine competition shut up shop eight Exchange Clubs in the Greater Miami area banded together in a non-profit group to encourage and educate youth in aviation. The organization is officially known as the Exchange Clubs Model Aviation Corp. One of the guiding lights is Tom Sutor, a Captain for National Airlines. Although he is not an active modeler himself, Tom has a great feeling for model building, and great words of praise for his associates who put on this outstanding initial contest.

With plenty of prizes, plenty of housing and plenty of advance notice the turn-out at the 2nd annual K.O. affair should rival the Nationals. Pilot Sutor, incidentally, heads up the Aviation Study Panel of the National Exchange Club. Also on his committee is Maurice Teter of East Dallas, Texas, former director of the National Modelplane Championships.

Add Miami. Entrants from five different states and Cuba topped other contestants in the Pan American World Airways sponsored PAA-Load event at the King Orange battle. Watches were awarded to 12 first, second and third place winners in three classes.

Winners in the Junior-Senior Half-A PAA-Load were Harold Thompson, Miami, 1st; Robert Young, Miami, 2nd; and Jesus A. Blanco, Havana, Cuba, 3rd. Open class Half-A winners were Don Schattschneider, West Allis, Wisc.; Bryton Barron, Springfield, Va., 2nd; and Bruno Markiewicz, Detroit, 3rd.

In the A and B class Junior-Senior winners were Roger Barron, Springfield, Va., 1st; Harold Thompson, Miami, 2nd; and Robert Young, Miami, 3rd. Open winners: A. H. Cowan, Jr., Miami, 1st; Bruno Markiewicz, 2nd; and Robert McBride, Minneapolis, 3rd.

Overseas Jasco? American modelers know that JASCO stands for Junior

Aeronautical Supply Company, a concern started by Johnny Young and Frank Zaic and currently carried on by several members of the Zaic family (Frank is no longer officially connected with the concern). But if you'd been reading the January issue of *Aeromodeler* you might have thought Jasco had gone international with a British branch. But "Jasco" of Southport, England, has no connection with JASCO of New York City. Miss Christine Zaic is our source of information on this point.

Cleveland Jumpin' With Contests. In its big annual indoor model meet sponsored by the Cleveland Press, the Cleveland Recreation Division and the Cleveland Coca-Cola Bottling Co., Dick Obarski, 36, of Akron, hung up the high microfilm time of the day in Cleveland's Public Hall with 14 minutes, 31.9 seconds. There were lots of novice classes and entries, so it may be that Cleveland will revive indoor modeling nationally with the help of flyers from Detroit! In the paper covered division one entrant, Dave



Roger Coleman with his rabbit-wrecking F/F. Rog claims Half-A hit rabbit in the glide!

Chest and the schools and clubs. Looks to us like smart modelers will soon be moving to Cleveland.

Help Wanted. John C. Durand is compiling a technical history on the Chance Vought F4U Corsair for future publication. Although the Navy and Marines



Hobbies in Action—\$25 Award Winner

Hal Roth launches 9/4 oz. Wakefield in 35 mph wind handicapped somewhat by a 24" prop. Hal's wife, Tinnie, took this picture with an automatic Rolletflex. Zeiss Tessar f/3.5 lens. Film was Plus-X and exposure in a normal front-lighted scene was 1/250 at f/6.3. K-1 filter. Hal, long-time modeler, now a writer-photog.



Car combination: portable garage and traveling tool box. Lid becomes work surface.

Domizi, came all the way from Darien, Conn.!

Contestants are grouped by ages into Dodoes (9 and younger), Bentams (10 and 11), Fledglings (12 and 13), Juniors (14 and 15), Seniors (16 through 20) and Open (21 and over). Types of models flown vary from one age class to another. Dodoes, for instance, fly gliders and "pre-fabs" (Cleveland Quickies and Top-Flite's Jig-Timers). No one under 14 flies microfilm covered endurance craft.

Over by the time you read this will have been Cleveland's other big mid-winter affair, the National Model Plane Show. You've read about this before in these columns. It's a wonderful competition that ties in with the Community

have given him assistance along with the Vought people, John feels that he may still be able to obtain much needed material from collectors, modelers and other aviation enthusiasts, if he can just contact them.

He's prepared a three-page pamphlet on the "Development of USAAF and USAF Markings" in hopes that some of our readers might be willing to send him whatever material they have available in exchange for the pamphlet. To John's knowledge his folder is the only complete discussion on this subject (at least, the only free one, JCD) and we agree that it should prove interesting to model builders and collectors.

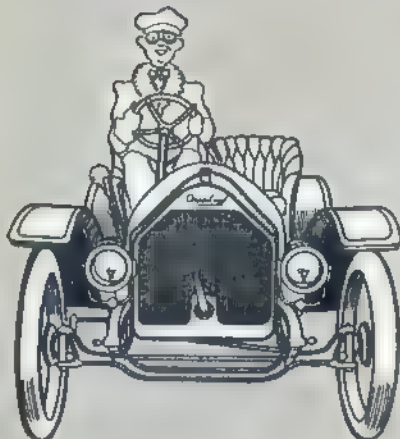
John would (Continued on page 80)

AUTO

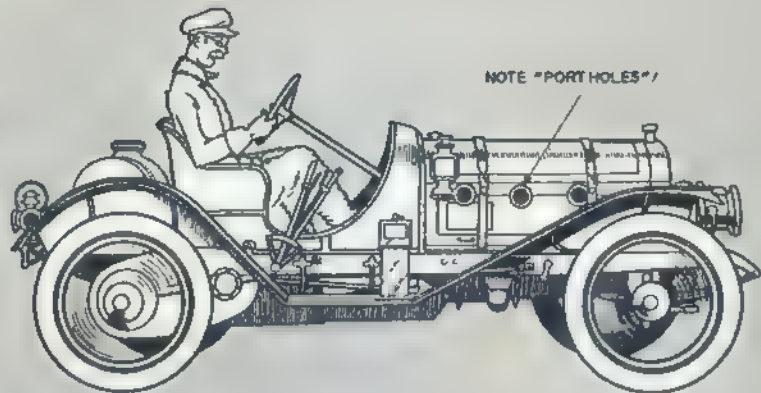
Progress

By DOUGLAS ROLFE

Early Sports Cars

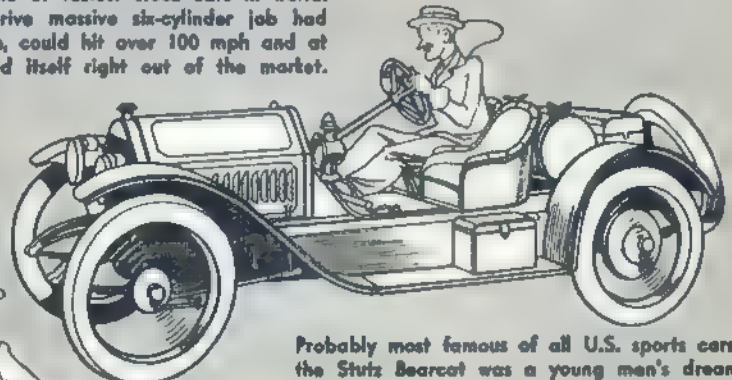


Oakland was responsible for this air-conditioned sports roadster in 1910. The Model M. It had a four-cylinder 40 hp engine—sold for about \$1,700.

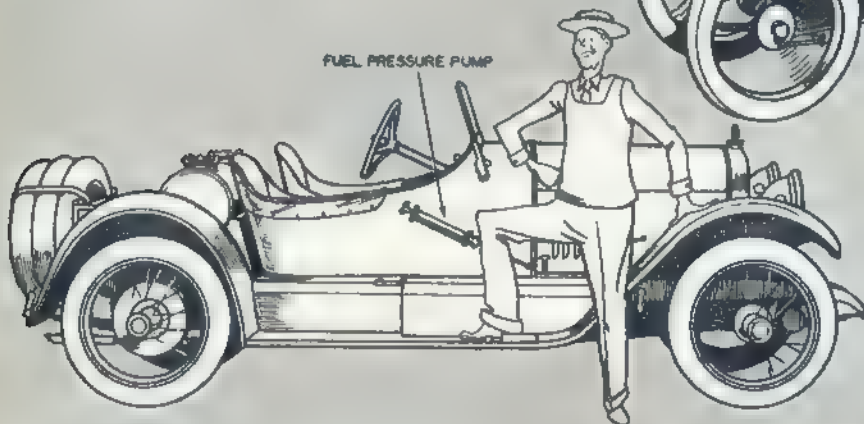


NOTE "PORT HOLES"!

The 1910 Chadwick, now only a fond memory, was once one of fastest stock cars in world. This chain-drive massive six-cylinder job had dual ignition, could hit over 100 mph and at \$4,600 priced itself right out of the market.



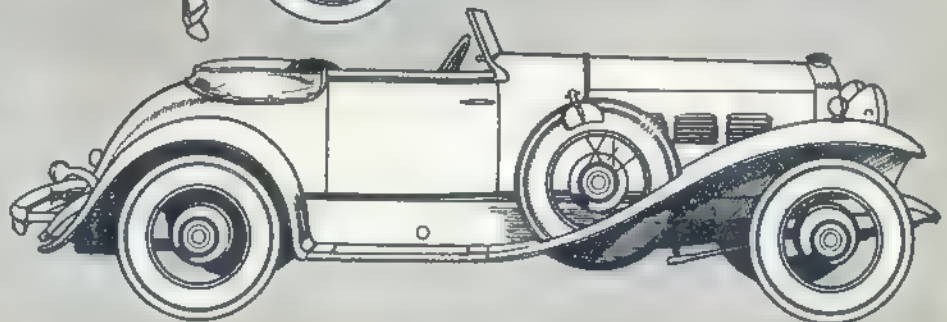
Probably most famous of all U.S. sports cars, the Stutz Bearcat was a young men's dream forty years or so ago. The 1914 model shown had a 60 hp engine and could hit the eighty-mile mark with ease.



FUEL PRESSURE PUMP

Practically every genuine old car collector would give his eye teeth to snatch one of these truly beautiful 1921 Mercer Raceabouts (above)! Powered with 4-cylinder 70 hp engine, it was designed for fast driving.

Model DV-32 Stutz was attempt to revive the Bearcat tradition. Termed the Super Bearcat, it had a brief success in 1932 but was much too conventional to rate as a true sports car.

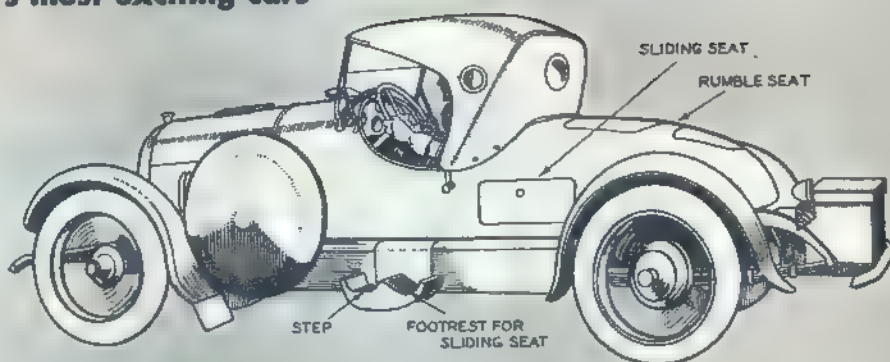


The current revival of interest in sports cars suggests a backward look toward those turned out so plentifully in the U.S. at one time. Going back nearly 50 years we find the prerequisites of early American sports cars were cut-down bodies or better still individual bucket seats, wire wheels

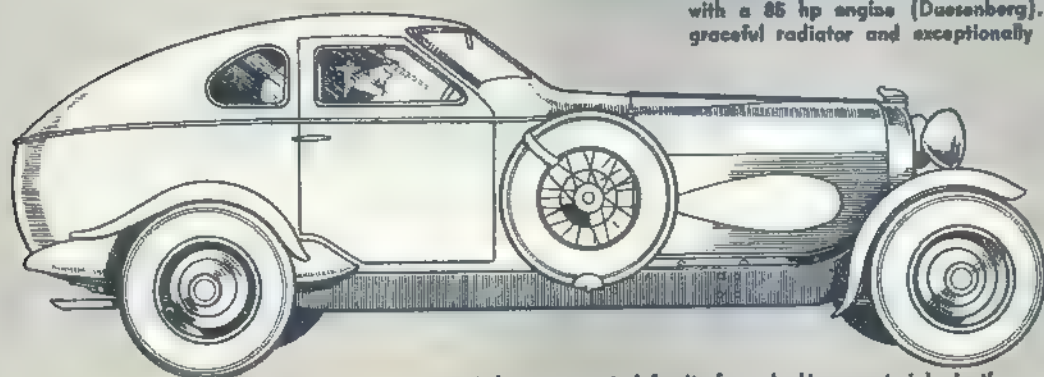
and lots of spare parts, preferably cylindrical, excessive headlights and a total disregard for such sissy items as windshields, tops and all-around comfort. The Stutz Bearcat is probably the most typical example embodying these qualities—yet it was a true sports car, one of the

No one can deny that the U.S. auto industry produced some of the world's most exciting cars

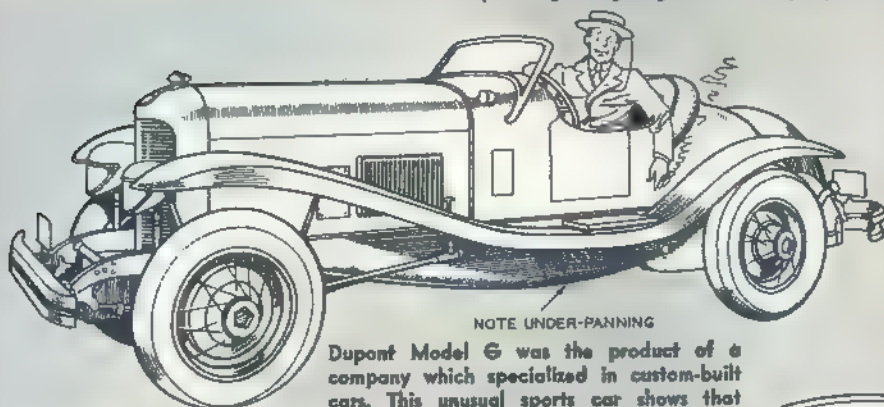
The 1919 custom-built Silver Six Kissel-Kar (right) was an outstanding contribution to U.S. sports cars. The folding rumble seat accommodated two extra passengers, the disappearing side seats two more if necessary. (Note the combination step and footrest for the side-seat passengers). Kissel started building cars in 1906, stopped 1931.



A little-known U.S. car, the Richelieu (right) was powered with a 85 hp engine (Duesenberg). Had domed fenders, graceful radiator and exceptionally long wheelbase; 1922.

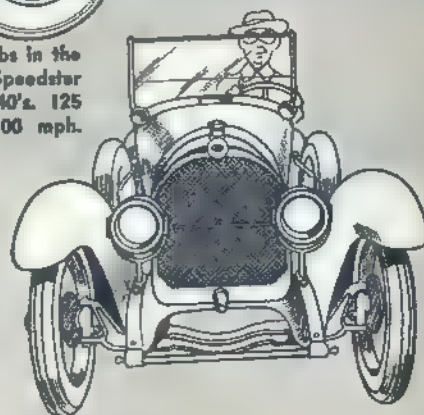


Auburn was noted for its fancy-looking sports jobs in the late 20's and early 30's. This Model 120 Cabin Speedster anticipated familiar body lines of the early 40's. 125 hp straight eight gave it a top speed of 100 mph.

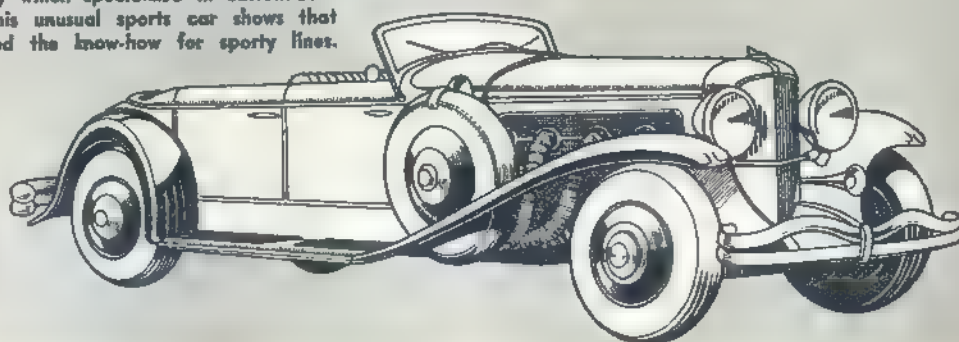


NOTE UNDER-PANNING

Dupont Model G was the product of a company which specialized in custom-built cars. This unusual sports car shows that they had the know-how for sporty lines.



Last of the fabulous custom-built Duesenbergs, the Model SJ Sports Phaeton had a 320 hp supercharged engine and was certainly one of the most magnificent cars ever to ride U.S. highways.



fastest of its day. The last Super Duesenberg shows clearly how the sports car declined in this country. It gradually became almost a conventional automobile with few fakers. Exceptions were such classic beauties as the Auburn Cabin Speedster, the Dupont Model G, and the magnificent Duesenberg SJ.

Recently the U.S., forced into retaliatory action by foreign imports, has again started making sports cars. In a coming issue we will cover some of these. Another issue will tell the MG story—the popular English car that has remained virtually unchanged for almost 20 years.

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POLYSTYRENE PLASTIC CEMENT
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SPECIAL! FOR THE R/C EXPERIMENTER—

Perfected Simplified Dual Proportional Control

By HELMUT KEUHNEL

If you're ready to step upward and onward from single control, rudder-only craft, this timely system offers dual and simultaneous features hard to beat

There is no doubt but that multi-controls will be THE thing for 1955. The proportional-operation-of-more-than-one-control system shown here does the trick in about as simple a way as possible. Helmut Keuhnel has been flying the equipment described for nearly a year; though not too active in contest flying, he did take a first place with his dual simultaneous proportional system. He was able to top all other R/C flyers at the big 1954 National Capitol Meet on a blustery cold day in July, and attributes this win solely to the fact that he had such close vertical control of his plane—something that is most handy in either contest or sport windy-weather flying.—The Editors.

More and more R/C experimenters, while not dissatisfied with their rudder-only planes, are looking ahead to elevator control. But the problem is more complicated, if the modeler prefers the proportional system, since it has not been anywhere near as easy to add a second control to proportional systems as it is when escapements are used. And when we consider dual and simultaneous proportional control, the picture can get a bit grim.

The ideas to be presented here have been under trial for more than a year and have proven very successful. Two methods for dual proportional will be given; the first is a fully electrical system which has been in use the longest. By now most builders are familiar with the requirements of proportional control systems, so we won't go into this. Those who need a bit of background can refer to articles on the subject in the January, October and November, 1954, issues of this magazine.

Modelers who are hep will know that proportional control is usually accomplished by varying the length of the pulses sent to the plane, with short pulses giving one rudder extreme and long pulses the opposite; normally, pulses that are about the same length as the space between them give neutral, or center rudder. In most systems, a variation of the pulse rate—that is, how fast the pulses are sent out—does not change the rudder position appreciably.

By the simple means shown in Fig. A, we can make use of rate change to control the position of the elevator, and this simple system allows simultaneous variation of both rudder and elevator position. It will be seen that the receiver relay operates a single-coil actuator for the rudder; the system may be applied to a double coil actuator just as well, but in this case the added equipment would be connected across only one of the two actuator windings.

Also, note that if there is spark suppression equipment on the relay contacts, it should be removed from the side to which the elevator operating circuit is attached. The reason for this is simple—it is that arc you see at the relay contacts that is put to use to work the second relay and move the elevator actuator.

Every time the receiver relay contacts open, the rudder actuator shoots an inductive pulse backward (in the opposite direction to battery polarity) through the circuit; this pulse can burn the relay contacts or make them stick together. In Fig. A the inductive pulse is put to use; it passes through the 1N34 diode and charges the electrolytic condenser. The pulse is of very short duration but has quite a kick (ever get your fingers across the relay contacts as they opened?) and furthermore, it is of about the same potency regardless of whether the rudder operating pulses are long or short. The diode is required—and must be connected exactly as shown with respect to the $4\frac{1}{2}$ V battery—to allow the pulse kicks through, but block the battery voltage from the condenser and elevator relay.

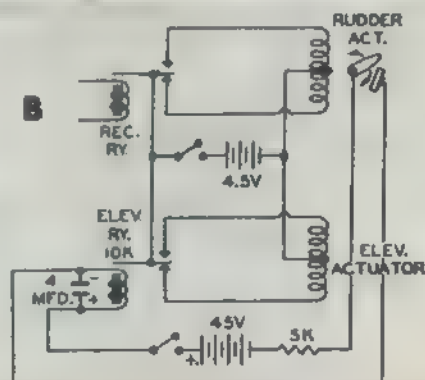
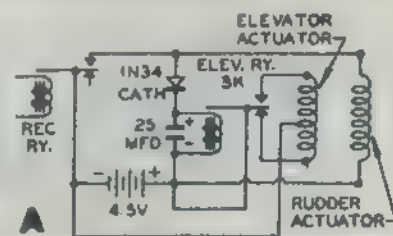
Now look at Fig. G. At the top are the conditions for a pulse rate of 1 pulse per second (1 PPS); the rudder pulse is on half the time and off the other half. The elevator pulse—which comes just as the rudder goes from on to off—is quite short, and so the elevator could be down for the duration of this short pulse and up all the rest of the one second interval. In the center set of conditions, the rudder pulse rate has been doubled (but the rudder is still off half the time and on the other half, so is still in neutral) and the added kicks to the elevator relay bring it to pretty near neutral, actually a little more on the up side.

Still further speeding up of the rudder pulse rate brings the elevator to almost full down; note that with all three pulse

rates shown, the duration of the elevator pulses is always the same. With higher rates there are just more of them. To show it another way, look at Fig. F, which shows the elevator position as rudder rate is varied; it can be seen that neutral elevator corresponds to $2\frac{1}{2}$ PPS on the rudder.

The system is arranged to give full up elevator at zero rudder pulse rate, since this is considered a fail-safe condition, should signals stop for any reason. It could be set up the opposite way if you prefer.

To retrace our steps quickly, then, the rudder actuator operates just as in a normal proportional control circuit. Each time the receiver relay opens, an inductive kick passes through the 1N34 diode and charges up the 25 mf. condenser; this condenser charge leaks off through the winding of the 3K relay (it can't go any other direction since the diode appears as a very high resistance to keep the condenser charge from "backing up"). The elevator relay is held closed for the same length of time on each rudder pulse, regardless of rudder



Convair's VTO Delta Proves Speedy Semi-Scale Control Line Model

By LAWRENCE H. CONOVER

■ The development by the U.S. of two vertical take-off fighters aroused considerable interest in both full-scale aviation circles as well as control-line.

What seemed to be an easy project turned out to be rather fancy. The modeler faces the same problems as the full-scale research groups. How to maintain control at zero forward speed, with no outer flow on the control surfaces. Full scale must have gyro stabilization (a sort of auto-pilot), thrust greater than weight, and pilot. This apparently will do the job.

The most important requirement for you will be a good powerplant. The Thermal Hopper puts out ten to twelve ounces of static thrust on a 6/3 prop. The model weighs 4.5 ounces. So it goes up.

A light model VTO is best. For that reason built-up fuselage construction was used. It also accommodates the Thermal Hopper mounting more easily. If you wish to do a quick job for your first one, carve and hollow the fuselage from a block. Then fit a front intake motor directly on the firewall. The firewall should be cloth bound and well glued to front end. This heavier model will fly O.K., but is not recommended for real vertical take-offs.

In building the lightweight model, the plans will be found pretty self-explanatory. The wing is used as a crutch, and keels and formers are glued to it. Tip tanks are light $\frac{3}{8}$ " sq. balsa rounded. Shock absorber cans on the fins are $\frac{1}{4}$ " sq. balsa rounded. All take-off pins are .046" wire with a $\frac{1}{4}$ " washer soldered in place.

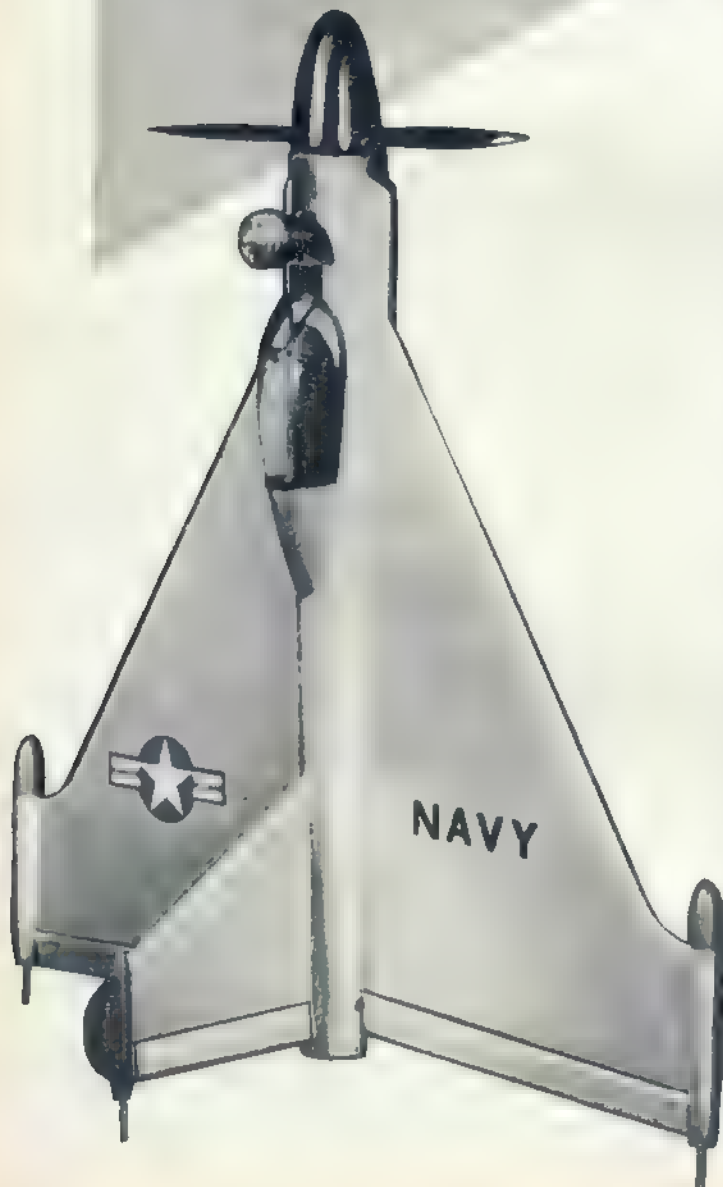
Your control system must work very freely. 1/16" aluminum tubing and pins are fine for hinges. Note that the center hinge pin is all one piece, glued to the fuselage. The elevator connector is 1/16" dowel well glued to the top of the surfaces. Control system is quite similar to prefab kit style. All connections are crank-hooks, no soldering required. Elevator horn is a wiring terminal, and is the last part glued on. Bellcrank is mounted below the wing using thin plywood washers on each side.

After the motor is mounted wrap a piece of Scotch Tape around the cylinder. Then build the cowl around it. It consists of four pieces of $\frac{1}{4}$ " sheet glued, shaped and hollowed. Inlet blocks are added when the cowl has been cemented on. They give needed strength to this section.

The scale spinner is a bit of work if done by hand. Use very light balsa. You can shape this on a drill press in about five minutes. It must then be hollowed out to fit over a one-inch Sullivan Snap-on spinner. Rough up the surface of the nylon spinner and glue the balsa one to it. Remember, this will be turning 15,000 rpm. Make it true.

Finish was two coats of filler-coat plus two light coats of aluminum powder and butyrate clear mixed. A top coat of clear butyrate makes the surface particles flow together.

Now for the special effects. VTO's are tough! The test model either flipped over backward or rolled into the center of the

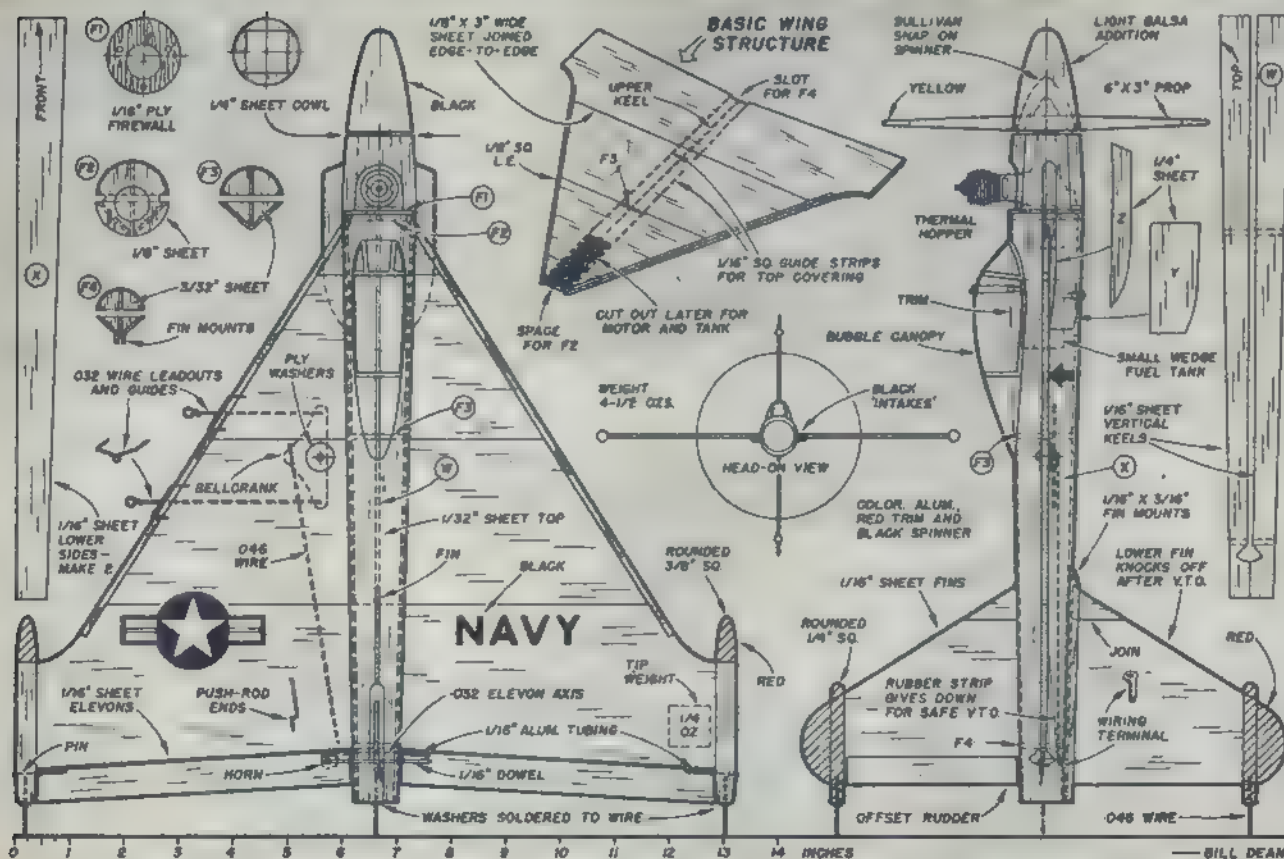




Jim Long (left) holds for a "drop-out" launch while Ed Siah prepares vertical take-off. Ed found model must be held straight up.

circle right at the pilot. On one of these cross-circle jaunts it hit the end of the lines on the other side and started flying. I was so surprised I dumped it in. To stop short loops on take-off automatic down-elevator was installed. When there is no tension on the lines you have full down.

I found that flying clockwise helped to keep torque from rolling the model into the center. Also required less out-rudder. However, when VTO'ing in a clockwise direction torque pulls the nose outward, and gives down-elevator. So, when flying clockwise, either leave out the built (Continued on page 72)



Full-size plans for the V.T.O. Delta control line are part of Group Plans #455 available from Hobby Helpers, 770 Hunts Point Avenue, New York 59, N. Y. (50c)



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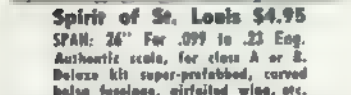
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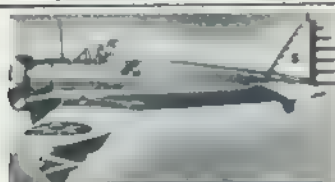
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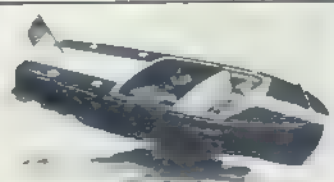
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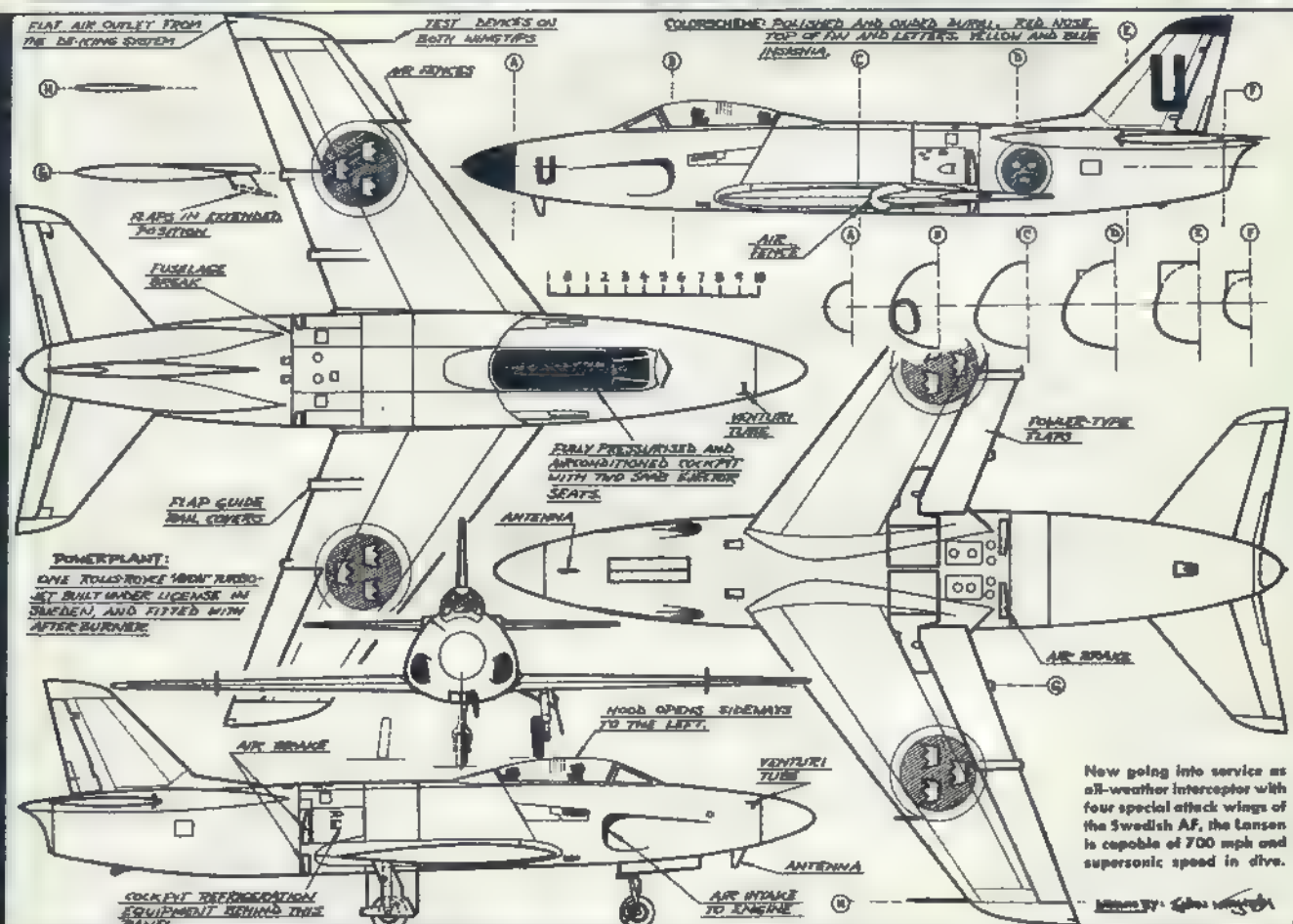
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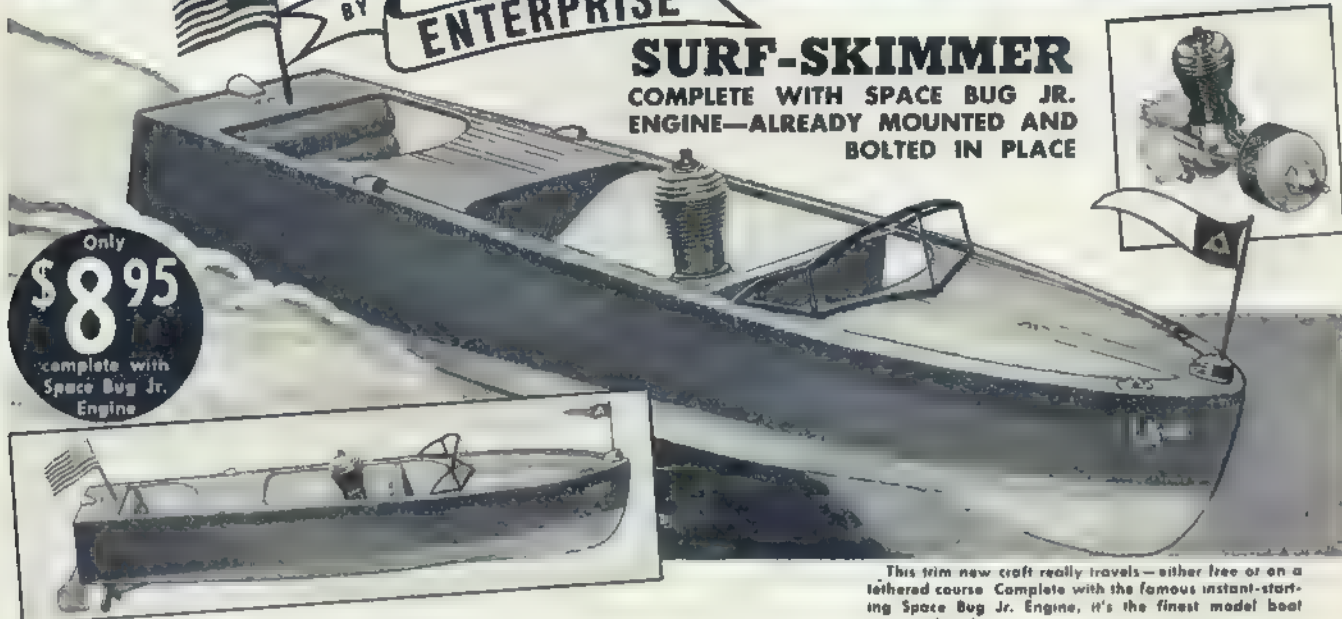


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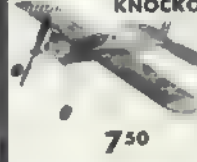
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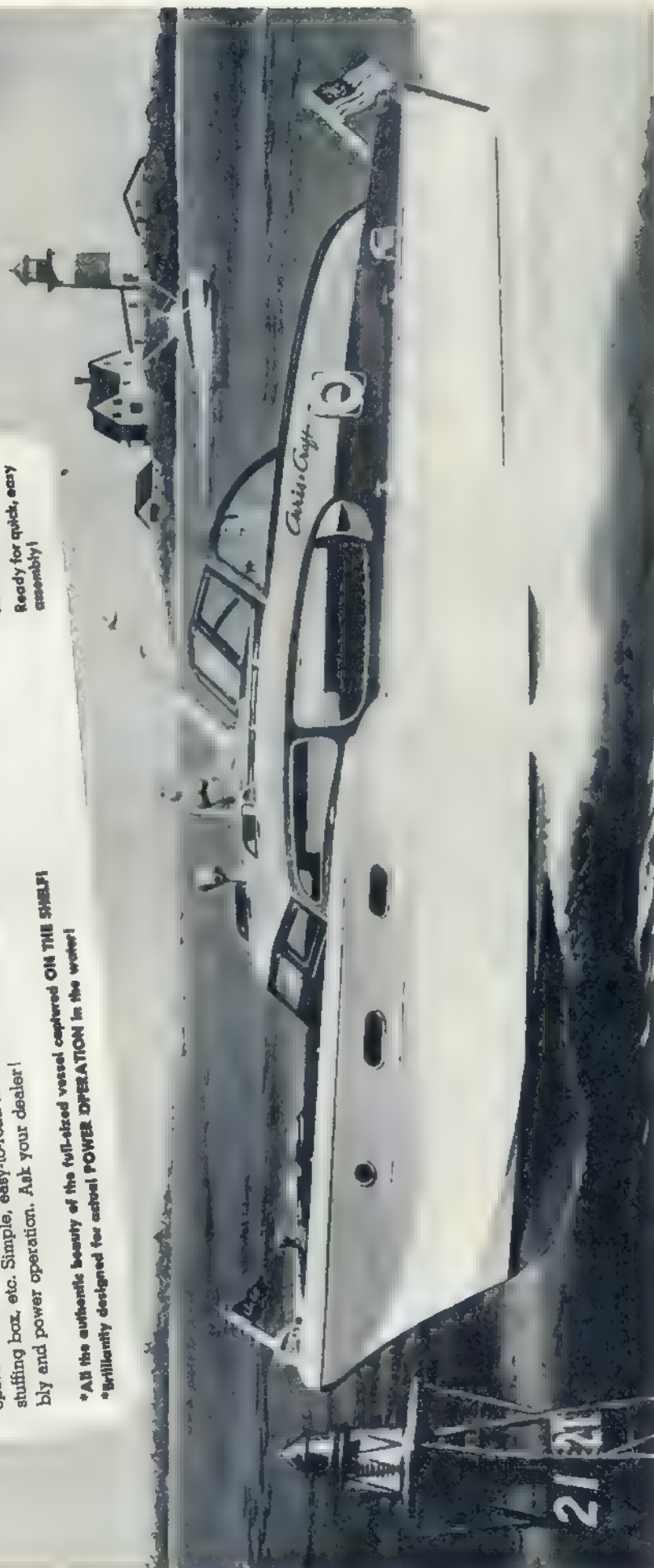
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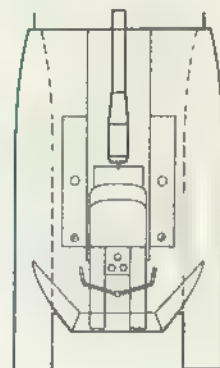
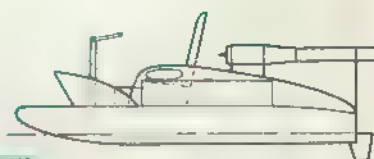
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SECOND
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Outboard racing hydroplane by Philip J. Conlon, Jr. of Charleston, N. C. It has a rather unusual engine installation, the outboard being mounted in-board of the stern in a well. Because of this forward position a variety of powerplants can be used without seriously affecting the center of gravity. Another unusual feature is the prone position of driver which reduces drag. Length of boat is 12 ft. With 25 hp motor the speed is around 60 mph.



THIRD
\$10
AWARD

Runabout-speedster by Donny Payne of Maringouin, La. It is 15 ft. long with a 6 ft. beam, has aluminum hull and framing, the deck is of mahogany plywood. Powered by a 182 hp V-8 engine and is capable of 60 mph. Can seat three in front.



Rules governing this design competition are as follows: Profile (side), plan (deck) and (cross) sectional views of the proposed craft will be required, plus any detail sketches necessary to illustrate unusual features. Do not handicap yourself by submitting hull drawings less than 6 inches in overall length. Give sketches of craft from three-quarter front and rear positions. Photos of a model of the proposed design may be included. Information of powerplant(s), estimated performance,

dimensions and explanations of special features are required. Data as to age, occupation or schooling of the entrant should accompany each submission. Mail entries to Boat Design Competition, Air Trails HOBBIES For Young Men, 304 E. 45th St., New York 17, N. Y. Entry each month judged most practical or of greatest significance will receive \$50; \$25 will go to second place and \$10 for third. The editors regret they cannot enter into any correspondence or return entries.

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Secrets of Model Boat Finishing

(Continued from page 33)

dries. Thin the dope about 15 percent and brush on two additional coats. When thoroughly dry sand with 320 paper or finer to remove any dust spots or other imperfections. Thin the dope an additional five percent and brush on the final two coats.

The majority of ship models do not require a high gloss finish, therefore it is not necessary to rub down the hull. If, on the other hand, the craft you are reproducing is of the smaller racing or sport or private type, then certainly, by all means do rub down the finish. We use Aero Gloss rubbing compound or any automotive type rubbing compound. Apply this with a wad of absorbent cotton and rub to a high, smooth gloss with a soft flannel cloth. Work on a small area at a time and do not rub too hard at your first try. It is advisable to work one area with several applications in order to determine how the rubbing is progressing and also to be certain that an excessive amount of color is not being removed.

Mahogany veneer has long been a popular material with which to cover the hulls of model cabin cruisers, speed boats and some sailing craft with simple developable surfaces. Mahogany planking is used on craft such as these which do not have simple developable surfaces. Although some model builders elect to color the mahogany covering, countless others prefer to allow the natural beauty of the wood enhance the model's appearance.

We have found that despite the relative hardness of mahogany it requires a considerable amount of filler to insure being made watertight.

It is not necessary to apply a stain to mahogany, and as a matter of fact we never do. However, if a stain is contemplated care should be taken during construction not to allow any cement to touch the exterior of the veneer covering. This would prevent the stain from penetrating the wood and cause a spotted finish. Stains should not be brushed on but rather rubbed on with a wet, not soaking, piece of absorbent cotton or a soft cloth. Wipe off any excess stain.

One of the best sealers for hardwoods is Firzite. This product has excellent penetrating qualities for sealing grain. Brush on two successive coats of Firzite, which is available at most paint or hardware stores, and sand thoroughly when dry with 3/0 sandpaper. Two additional coats should then be brushed on and sanded when dry with 3/0 sandpaper. By this time the hull surface should be very smooth. If not, add two more coats of Firzite and sand again.

A good grade of spar varnish should be brushed on at this time. It is advisable to brush this well and not apply it too heavily. Varnish cannot be flowed onto the model like dope or it will run. Thin the spar varnish a small amount if it proves to be so thick that the brush "pulls." Spar varnish takes several hours to dry but it is advisable to let an application dry overnight before it is sanded. Use 8/0 wet sandpaper on this first coat of varnish. Be sure it is dipped in water often, and do not sand too heavily.

Repeat this spar varnish application

thrice again. The last coat need not be sanded but can be rubbed down with Aero Gloss rubbing compound. If it appears that additional coats of varnish should be applied by all means do so. Sand all coats except the final one.

The above described varnish finish has been found to be very durable, especially for larger models. An alternate natural finish for mahogany hulls is to merely continually apply liberal quantities of Testors Sanding Sealer until a fine, smooth, watertight surface is obtained. The usual sanding is important as described for balsa hulls. A coat of clear dope thinned about 15 percent can be applied to complete this finish.

We selected Sanding Sealer because of its amber-transparent color which enhances the grain of mahogany. Other wood fillers found at model shops are white in color and would hide the grain. It is not advisable to try to use clear dope to seal the wood grain because of its relatively hard surface which would be difficult to sand. Dope also tends to hug the surface of the wood rather than penetrate the pores.

If a painted mahogany hull is preferred, colored dope can be added after the grain has been sealed with either Aero Gloss Filler Coat, Testors Sanding Sealer or Aristocraft Wood Filler.

Another method is to seal the hull with Firzite as described and brush on the color using two coats of a good grade of quick drying enamel such as Red Devil or Devco. This is not fuel proof, however.

We'll continue the discussion next issue starting with the use of airplane dopes on pine hulls.

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CYCLE CHATTER



By OTTO EISELE
ASSOCIATE EDITOR
AMERICAN BICYCLIST

Roller race with riders doing about 50 mph. Left, Homer Johnson; right, Walter Crawford. Trainers stand behind riders to assist in emergency such as flat tire. (Al Hatos photo.)

■ Bicycle roller racing is an exciting and novel sport which sees cyclists pedal at speeds exceeding a mile a minute yet not moving an inch beyond the stationary location of the racing apparatus. Particularly at this time of the year such cycling contests are a feature of many of the National Sportsmen's Shows which usher in the spring outdoor sports season. Such events have been one of the highlights of exhibitions staged in recent years at the Sportsmen's Shows in St. Louis and San Francisco.

Roller racing has been an interesting phase of cycling for many years. The origin of so-called bicycle rollers dates back to cycling before the turn of the century when ambitious youth, then as now, became restless during periods of bad weather which prevented outdoor cycling and which led them to figure out some method of keeping up cycling activity indoors.

The story goes that two cycling brothers decided to take the rollers from an old clothes wringer. They fixed the rollers in a rack and placed the front fork of the bicycle in a rigid frame with the rear bicycle wheel resting on the wringer rollers. It wasn't long before they figured out that if they could get hold of a third roller from a wringer they could place the rear wheel between the two rear rollers, and with the front wheel rolling on top of the third roller, and all secure in a frame, they would have a veritable treadmill type of cycling, or, as it is known today, roller racing. The first such home trainer is registered in the British Patent Office May 12, 1894—and another type was patented the following year, March 1, 1895.

Bicycle rollers, or home trainers as they are also known, are based on this treadmill principle. The rear wheel of the bicycle rests in the bed of two rollers which are so set as to leave a space of about two inches between them. The front wheel of the bicycle rests on the

top of a single roller set a proper distance in front of the pair of rollers. A leather belt running over spools on the outside of the rollers keeps all rollers moving in unison, provides the momentum which keeps the bicycle in motion and furnishes the means of maintaining balance in the same manner as in conventional movement of the bicycle on a street or roadway.

In addition to the belt, connecting cables from the front roller are attached to a mechanism which turns pointers on a dial, and when geared and properly synchronized, these measure off a mile by ten revolutions on the face of the dial, or ten turns for a mile. For purposes of identification the pointers are painted the same color as the roller with which they are connected. Thus, races can be staged and cyclists timed for measured distances.

The usual bicycle roller race, using a championship event as the criterion, is run at one mile and riders have been known to cover that distance in seconds under one minute, simulating travel at speeds in excess of sixty miles an hour. The fastest one-mile race on rollers recorded in recent years was a mile in 1.06 2/5, a performance turned in by Furman Kugler of Somerville, N.J., a little over a decade ago, before he lost his life serving with our Navy in the Pacific. Incidentally, his father Fred Kugler is responsible for America's greatest annual bicycle race—the Fifty Mile Tour of Somerville run every Decoration Day as a memorial to Furman and Carl Anderson, another New Jersey cyclist lost in World War II.

When six-day bicycle racing was at its peak, the winners and stars of these week-long grinds usually toured the vaudeville circuits riding exhibition bicycle races on rollers—with the accompanying dial showing the audience what speed was worked up in competition.

The gear that a rider uses is very important in roller racing, and since there is very little ground resistance to the weight of the rider and his bicycle, and of course no wind resistance at all, the theory of a high gear can be tested to the limit. Racing rules, however, restrict the gears which may be employed to a maximum of 25 teeth on the front sprocket and minimum of 7 teeth on the rear sprocket. Thus the ratio is about three and one half to one, or, for every complete revolution of the pedals the bicycle wheel turns approximately three and one half times. It will be seen, therefore, that the greater the size of the front sprocket compared to the size of the rear sprocket, the greater the speed or ground covered.

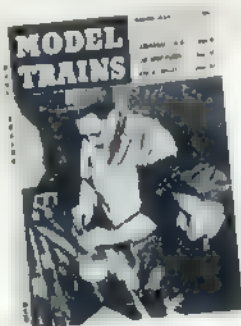
Another mechanical feature of the equipment which has to be covered by rules is the length of the sprocket crank—the shorter the crank the smaller the size of the circle described by the rider's feet. The standard crank in the U.S.A. is 6½ inches, but some riders might get better action with a 6-inch or 5¾-inch crank. To avoid advantage gained by unusual equipment the rule stipulates that the crank cannot be less than 6½ inches.

Coming under the equipment regulations is the circumference of the wheels. A guide 28 inches in length is used to measure the diameter of the wheels with tires inflated to insure a maximum circumference, since all these factors would give an advantage to some rider who might have available special facilities or equipment favorable for his physique and leg action.

With special equipment, including a very large gear, Reg Harris of Great Britain, present and four-time professional sprint champion of the world, pedaled over a mile and a half in one minute, approximating a speed of 90 miles per hour. However, as stated previously, the American record for an amateur is a mile in one minute, six and two-fifths seconds, and shorter races have been covered at greater mile-per-hour speed. The half mile has been recorded in 32 seconds and the quarter mile in 16 seconds.

Training for this highly specialized cycling activity requires very careful attention. One of the top-notch roller riders in Eastern competition, Ernest McAdams of the Bronx, N.Y., who has since retired, held himself to a rigid training schedule when he was competing and registering one-mile races in close to the record time set by Furman Kugler. Two months of training was required and particular emphasis placed on exercise other than cycling, and on diet and hours of rest.

The need for this careful training is explained by the fact that a cyclist endeavors to attain perfection by riding the rollers on what appears to be a straight line—not swerving the front wheel. This has the effect of the rider's losing no distance and spinning his feet and legs as though he, the bicycle and the rollers were almost a single piece of machinery with whirling wheels, rollers and legs. But his body is still and the bicycle frame firm and steady.



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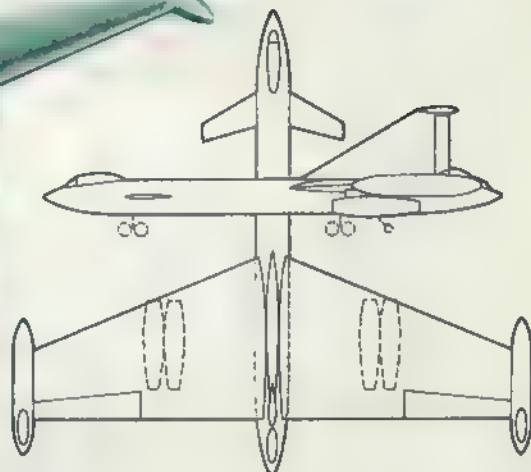
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four-place twin-jet light transport by Preston Bruning of Maplewood, N. J. A canard design, powered by two jet engines of approximately 600 lbs. thrust each. Should cruise easily at around 275 mph and still be capable of a low landing speed, due to generous wing area. Main wheels of tricycle landing gear retract into the wings.



Small VTO sport plane by LeRoy Crookes of Scotia, N. Y. It is powered by a 100 hp engine driving a compressor which supplies air to the propeller, with exhaust vents at tips where fuel is injected and burned. Hot exhaust gases rotate propeller. In this manner torque is eliminated without use of a contrarotating device. Transition from vertical to horizontal flight achieved by forward mounted surface.

THIRD
\$10
AWARD

Rules governing this "aircraft of the future" competition are as follows: Three-view sketches of the envisioned aircraft will be required. These should be not less than 8½ x 11 inches for the entire three views. Give sketches of the complete airplane or space craft in three-quarter front and rear positions. Photos of a model of the proposed design may be included. Informa-

tion on the powerplant(s), estimated performance, dimensions, and explanations of any unusual features are required. Data as to age, occupation or schooling of the entrant will be welcomed by the editors and judges. The design may be of any type; space craft, commercial, military planes (fighters, bombers, troop transports), planes for the private flyer and sporting

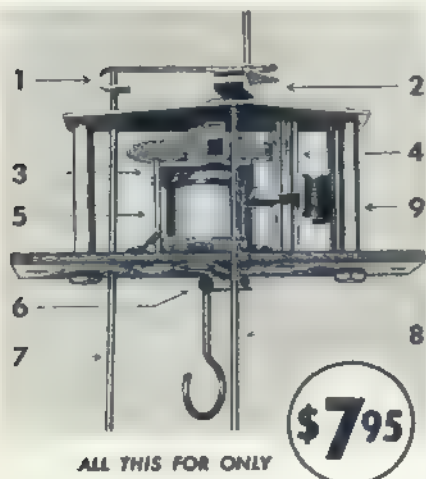
or racing airplanes. The entry each month judged the most practical or of the greatest significance will receive an award of \$50; \$25 for second place and \$10 for third. Mail entries to Airmen of Vision, c/o Air Trails HOBBIES for Young Men, 304 E. 45th St., New York 17, N. Y. The editors regret they cannot enter into any correspondence on submissions.



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Ken's Dreamboat

(Continued from page 36)

sponge-rubber weather stripping from the hardware store, cut it to fit the wing cradle, and glue it in place with 3M weatherstrip cement. This serves a double purpose; when the wing is snubbed down to the hull with rubber bands, the sponge rubber is compressed and very effectively keeps water from entering the access hatch area; the sponge rubber, even though compressed, still acts as a vibration dampener between the engine pylon and the hull.

You now have a flying boat, ready to take the radio.

The radio and batteries are mounted on a 1/16" plywood base; the Babcock unit sits on a ¼" sponge rubber pad to which it is fixed by 3M cement; the batteries are grouped together into a pack, using masking tape, and then held onto the plywood base with rubber bands. No battery box is used—the soldered connections have to be remade when you change batteries, it's true—but you don't have any skipping. You also save weight.

The battery complement consists of: 3 22½ V. hearing aid "B"; 1 15 V. hearing aid "C"; 4 pen cells in parallel for the "A"; 2 pen cells in series for escapement.

If you decide to use a more powerful engine than the McCoy .09, the Dreamboat could carry the recommended battery complement which weighs about 5 ounces more than the above.

The plans show how the forward end of the plywood radio and battery base slides into retaining notches in the bulkhead at station #2. Then, with a single wood screw inserted through the base and into the hardwood block just aft of the step, the whole assembly is anchored in place, yet is quickly removable for service. In making up the harness, make the leads to the switch, escapement and ground as long enough to allow easy removal of the radio without disconnecting these wires.

Installation of the switch is a good gimmick. A 1/32" plywood skin doubler is glued to the hull side, and the mounting hole drilled through. The toggle switch juts out, of course, and has to be waterproof. Use a "blind" baby bottle nipple, and cut off the base enough so that the remaining top of the nipple covers the toggle switch handle, then attach it to the hull with 3M weatherstrip cement. The switch can be operated by pushing against the rubber nipple without letting any water get in.

The Babcock radio unit is recommended because of several reasons—simplicity for a radio beginner to understand it; easy mounting on sponge rubber; a sealed relay which won't be affected by moisture (very important around water); and the whole unit can be doused with water without hurting it.

Another reason, because it simplifies waterproofing, is the audio tuning feature of the Babcock. Leave the phone jack off the assembly, and to tune the radio, which can be easily done through the access hatch, attach alligator clips on leads to the phone jack, which is mounted on a piece of plywood; then clip one lead to the radio chassis, and the other to the proper wire, which is sticking out towards the access hatch, held in place by a piece of masking tape. This saves flying weight as well.

The usual advantages of the Bonner compound escapement are obvious, but the use of the third position for up elevator is a new twist. The drawing shows how it works; you'll have to tailor yours to fit your own installation. Just be sure (Continued on page 69)



Perfect flight control, the dream of model flyers! Just like flying full-size military target drones, bombers, etc. It's yours with—

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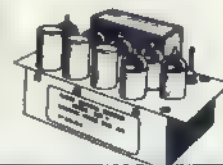
"With Babcock multi-channel, the elevators are used as trimmable non-neutralizing. This means the ship can be flown full power at any altitude, dive, level, climb or any place between. The pilot actually flies the plane, trimming as necessary for take-offs, turns, slow rolls, wind penetration (alone worth the feature) and for landing approaches. Of course, the elevators are fully controllable for all maneuvers in all environments."

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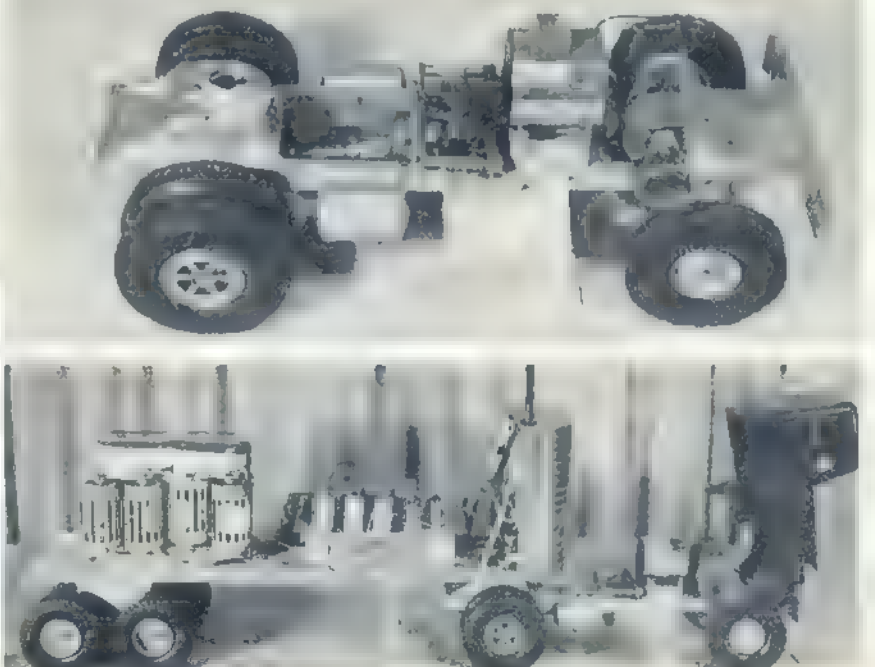
My Favorite Model



Indiana Fan Operates Radio-Controlled Tractor-Trailer

"This is my second radio-controlled tractor-trailer combination," says T. A. Kelley of Huntington, Ind. "Both were originally toys purchased at a store, disassembled and equipped with R/C units. The first contained a 465 radio but complexity of controls made it difficult to memorize the sequence. The present one,

shown here, utilizes the Babcock three-channel outfit which greatly simplifies the operation. Whenever I run the model it attracts a lot of attention. I also build R/C planes, but find that precision pattern is easier to achieve with the trailer-truck; with it, my spot landings are always perfect."



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(Continued from page 67)

that when the elevators are in neutral, the arm which is actuated by the escapement crank arm sits at the proper angle so the crank arm engages it when the escapement goes from second to third position. Also be sure the crank arm slips off the end of the elevator control arm when the escapement goes from third position to neutral. Lastly, either by limiting the elevator down travel, or the elevator control arm, make sure the elevator control arm doesn't spring back beyond its neutral position, as this could result in no elevator action, or worse yet, the escapement crank arm might dead end on the elevator control arm, which would leave the escapement locked in left rudder.

Incidentally, you will notice that the slot on the rudder torque rod arm, in which the escapement crank arm slides, opens up in a sort of diamond fashion from the top to the bottom. This prevents the rudder from having overtravel when you go from right to left rudder, and from left rudder to neutral. You don't have to use the diamond opening, but it's a good idea if you want to go to the slight additional trouble of making one.

Back in the tail of the hull, the torque rods for the elevator and rudder run through holes in a metal plate which is glued to the tail block. Although these holes can't be absolutely water proof, a drop of heavy oil will help shed the water. As for the tail plug for the escapement rubber, coat it with grease to keep water from seeping through. These areas are normally out of the water and spray path anyway.

For those of you who want to fly from land, a quick removable gear can easily be installed as shown. It is held on by

rubber bands running up over the forward part of the windshield. If you do this, be sure and check your hull for nicks before you go back on the water.

Dreamboat weighs two and three quarters pounds without landing gear; if you use pigmented dope, or Nylon covering, you may get up to three pounds. This is not serious, but the lighter weight gives better water characteristics. You will probably have to go to a .14 or .15 if your weight goes over three pounds.

Flying *Dreamboat* is pretty much like flying other R/C jobs; follow the advice of experts, though, and never launch *Dreamboat*, even in a hand glide, unless the radio is on, because you might want the control.

On the water, the rudder is not effective until *Dreamboat* is on the step; then she steers quite well. If a wing should dip, it'll plow for a bit, but will pick up by itself. The only thing is that it pulls the model into a circle and sometimes heads right back at you just as the wing breaks from the water. Then you're real busy steering the model back into the wind. After the photos were taken, some quick detachable tip floats were added which are really more in the nature of hydro-skis. They reduce the circling problem, but are not essential.

gave most trouble in single-tube receivers; where they had been installed in two-tube receivers, there did not seem to be much of a problem. At any rate, Raytheon's study of the problem means that we will probably now have RK61's that are much more uniform than they used to be. The tubes now being made should be good for at least three times the life of the old ones, and have been found to have adequate sensitivity in all types of receivers designed for this sort of tube.

Since the old tubes had an "informal" life expectancy of about 5 hours, the new ones should be good for at least 15. Generally, if the new tubes are found not to work too well in sets that have been used with the older tubes, a simple readjustment of the antenna coupling will be found to settle matters. If it doesn't, you might have to add a turn or two to the tuning inductance, and reduce the parallel capacity a bit.

Word comes from Dick Branstner that the relays used in General Motors auto electronic headlight dimmers are fine for R/C purposes. They have a resistance of about 5000 ohms, weigh around 1 oz. and are quite small in size. Price is about \$3, and Dick says a lot of the Detroit area R/C men have been using them.

The Tuned-Relay receiver used by Bonner and Evett at the 1954 Nats and developed by Vern Juenke has caused a lot of excitement in many quarters. Jim Fronkier (Box 326, Coffeyville, Kans.) writes that he has been experimenting with it, and we hear the same from many other builders. We felt the same about this outfit when we got the details from Howard Bonner at Chicago, and as a result we will have the full story on the re-

(Continued on page 86)

Everything Under Control

(Continued from page 21)

tubes, which we mentioned some issues back, were found not to be as sensitive as the older RK61's, and the makers—Raytheon Mfg. Co.—set out to find the answers. It seems that the new tubes

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RECREATION LEADER—A NEW PROFESSION. Do you like games, hobbies, working with people, organizing, and just people? Then here's something worth considering as a life work. Today "recreation" asks for leaders who are college-trained, the pay possibilities are high (a top man may get up to \$15,000 per year), and the demand is great (they're begging for such trained personnel).

The whole field of recreation has boomed since the war. At present there are at least 20,000 men and women engaged as full-time year-round professional leaders—but the need is far more. Positions may be had with community recreation departments, clubs of the Armed Forces (hobby club director etc.), hospitals (recreation therapist etc.), agencies like the Boy Scouts and 4H Clubs (camp director, health education director), colleges (campus recreation coordinator), industry, government and the like. There are a number of job titles, various rungs up the ladder. (A General Supervisor, for instance; he earns up to \$7,000 annually.)

To be able to climb those rungs, to qualify with the special training demanded by most employers, it is practically imperative to have a college degree in the subject. Today there are over 50 colleges and universities offering degrees with a major in recreation. The better schools include considerable field work, practical experience with actual groups. You may specialize in a certain "area," such as industrial or hospital recreation, and return to school for graduate study to prepare yourself for the high-high jobs.

For a free list of colleges and universities with major curriculums in recreation and for general information write to: Recreation Personnel Service, National Recreation Association, 315 Fourth Ave., New York 10, N. Y.

This organization advises you to begin as a high school student to prepare for a career. Take public speaking, participate in sports, dramatics and hobby group activities, try to obtain a part-time job at a playground or work at a summer camp, paid or voluntary.

FUTURE SEA CAPTAINS AHOY! Those spring exams for applicants to the U.S. Merchant Marine Academy will be held in April. You've heard about Annapolis and West Point and the recently established Air Force Academy—but how much do you know about this fourth

Government Service (in this case, Maritime) college? It's a four-year course, the second of which is spent at sea on ships of the Merchant Marine—during which period cadets each month get \$82.50 from the shipping companies concerned.

All graduates receive a Bachelor of Science degree, commission as Ensign in the Naval Reserve, and commission in the Maritime Service, and sit for examinations for license as third mate or third assistant engineer on ocean-going vessels.

The career as a ship's officer, however, is only one of those you may follow as the result of your education. Grads also become port engineers, marine superintendents, naval architecture engineers, port captains, fill posts in import-export firms. (All these jobs are in private industry; you may work for the government, too, in positions related to merchant ship activities.)

The Academy is located on Long Island Sound, on King's Point (Great Neck, N. Y.). Its strength is usually 1,000 men. Entrance exams are held twice a year—the other one being in November. As this implies, two classes graduate per year, February and August. (Which means that those who pass the present April exam will start school in August.) As at other government Academies, tuition is free.

You should have about \$300 in your sock for initial expenses. BUT all cadets receive \$65 a month for uniforms and other expenses. Of course, Uncle Sam also furnishes you with free quarters, board and dental and medical care.

To be eligible to apply, you must be an American citizen, between 16½ and 21 years old, and have a high school education or its equivalent. For full details, you may write to the Registrar, United States Merchant Marine Academy, King's Point, N. Y.

HOW MUCH can you expect to earn your first year after graduating from college—in your case, a minimum of four years from now? Well, even the electronic computers can't hit that one on the nose, but we do know things are getting better all the time. The average starting salary of college grads in all fields five years ago was \$255 a month. This year the engineering graduate will begin at an average of \$361 per month. (The rise in salary for college men is rapid; those who first went to work five years ago have now almost doubled their income.) This year companies report they will hire 19 percent more engineers and other technical grads than last year. . . . And since the shortage of engineers is expected to continue, the chances are your chances will be plenty good four years from now.

WHY MORE TECHNICIANS? In today's aircraft industry, for instance—why are so many more required now than formerly?

Mr. Leverett P. Wenk, Director of Personnel & Training for Republic Aviation Corp., came up with some figures to help answer that question. A modern fighter plane, he points out, requires 27 times as many engineering hours as its WW II counterpart. Besides the persons in 38 different engineering classifications needed to design and engineer the aircraft, 138 different classifications of technicians are called for to build it. Or take the jet engine—8,854 separate parts, this man says, and requiring 87 different kinds of specialists in its creation. Just one example why the need for trained technicians continues along with that for engineers.

HOBBY ITEMS IN THE NEWS

▶▶▶▶ Ariato-Craft Distinctive Miniatures (184 Penna. Ave., Newark 5, N. J.) adds operating cable car system to its line of HO scale railroad action units. Set in plastic consists of girder tower, valley station, mountain station and central supporting tower. Two cable cars and lines are included. Price is \$21.50.

▶▶▶▶ Forster Brothers (Lanark, Ill.) had so many requests for their grand-daddy of large engines, the two-speed Forster "99" spark ignition engine, that the firm has put it back into production on a limited schedule. The 2-speed timer will come as standard equipment. Says J. R. Forster, "This engine fits the bill for large models, especially radio controlled planes of 7 foot wing span or more, also radio controlled boats and cars." AHC has coils and condensers.

▶▶▶▶ The return of Silkspan GM (gas model grade) in new bright red and yellow has been announced by Aldine Paper Co. (535 5th Ave., New York 17, N. Y.). Silkspan was developed in 1940 to provide model airplane builders with an American-made covering material, designed especially for the purpose. Although the paper has been available in white since its inception, colors went to war and never returned... until now. Some R/Cers cover Nylon with paper.

▶▶▶▶ Revell's Highway Pioneer Foreign Classic Series now includes a miniature-in-plastic assembly set of the 1929 4 1/2 Liter British Bentley car. Retail at \$9.95. (Revell, Venice, Calif.)

▶▶▶▶ Scientific Model Airplane Co. (113 Monroe St., Newark 5, N. J.) now kitting \$1.50 Stunt Master, a Half-A stunt control line for small bore engines. Designed by Walter Musciano. Carved balsa fuselage, airfoiled balsa wing, die-cut balsa tail assembly, all metal parts preformed, hardware, decals. Span is 18 inches.

▶▶▶▶ Filmed version of Cheminol's TV show "Success Story" is available to clubs and dealers from Cheminol Corp. (9307 Bermudez St., Rivera, Calif.). It's a 30-minute, 16-mm affair. Shows how engines are made.

▶▶▶▶ Latest in the Monogram Plastikit all-plastic series is the Dipsey Doodle, a 3-point racing hydroplane. Kit is authentic in detail and finished model looks amazingly real. A dummy Mercury 10 outboard motor and a racing driver with helmet and life jacket are included in addition to the two-piece hull, floorboard, controls and the like. A Chicago sculptor was commissioned to mold, in clay, the racing driver and the result in plastic is a figure which is in perfect detail, even to a grim, determined expression on the face. Matt Wyrz, one of Chicago's most popular speedboat drivers, modeled for the figure. Molded in acetate plastic, the Dipsey Doodle retails for 98¢; comes in brown and blue plastic, with stand. (Monogram Models, 3421 W. 48th Place, Chicago 32).

THE AMERICAN LEGION, through its National Child Welfare Commission, conducts an extensive program in education and scholarship service in general. Among its recent announcements is the establishment of a fund which provides for scholarships up to four years' coverage to help in the post-high education of children of men who died in the line of duty while serving with the 5th Marines. Those eligible may apply by writing the Secretary-Treasurer, Fifth Marine Division Association, Marine Corps Headquarters, Washington 25, D. C., or to the Scholarship Information Service, The American Legion, P. O. Box 1055, Indianapolis 6, Ind.

The Legion's Child Welfare Service publishes a booklet called "Need a Lift?" whose story is told in the subtitle—"Educational Opportunities for Children of Veterans." This excellent and valuable compilation contains literally hundreds of scholarships available—listed by States, by the individual colleges, etc. Although the emphasis is on scholarships and loans for children of deceased or disabled veterans, opportunities of all kinds

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APPRENTICESHIP TRAINING offers a practical way to learn a skilled trade. As a regular employee in the apprenticeship category, you earn while you learn. Many American businesses are now using this system, complete with modern application—classroom instruction in addition to the on-the-job training.

Let's look briefly at the general plan for apprenticeship courses as offered by just one large manufacturing company—International Harvester. (In case you didn't know, they make lots of things besides farm machinery—such as freezers and refrigerators, motor trucks, bulldozers, road scrapers, etc.) The purpose, as in all such plans, is to prepare you to become a journeyman—that job grade which means you are a specialist in a skilled trade. The trades at Harvester include practically everything—tool maker, tool designer, carpenter, electrician, machinist, etc. You are an apprentice for approximately four years, during which time you will be paid an established hourly rate and get raises at regular intervals, every 1000 hours. On completing the course, you are paid at least the minimum journeyman rate for that job.

At the beginning of the course you will be handed a toolbox, receive textbooks as needed, and each year a "tool bonus" (\$50 the first year) to cover cost of tools required. Most of the instruction will be practical work experience. About four hours every week you will attend classes to study subjects directly related to your trade. (A tool maker apprentice, for instance, takes subjects like mechanical drawing and blueprint reading.) These classes are held on company time, right in the plants. . . .

This whole field of apprenticeship training covers scores of industries and trades. In an early issue we'll have a feature article that tells all about it—qualifications, where to apply, opportunities ahead.

MR. PEEPERS, the much beset science teacher on television, has as many problems as his students—but he wouldn't swap his job for any other. Ask any science teacher, and you'll find that most of them really feel the same way. . . . It's a job you might consider. The most pressing and important need in the whole teaching profession today is for science teachers—and by extension that need is tied up with whether the U.S. wins or loses the technological war the world is engaged in as of now. Some facts: at present more than 7,000 new science and math teachers are wanted to meet the demand; soon the figure will rise to 10,000 per year. Last year there were 8½ million boys and girls of high school age. By 1960 there will be 11 million. And . . . the average salaries of teachers in this country have more than doubled in the last ten years. They will continue to rise. . . . Keep the idea of teaching in mind.

Convair's VTO Delta

(Continued from page 55)

in "down," or give plenty of "up" on take-off.

Originally the lower fin was to remain on the ground, the model sliding out of it. With this arrangement the nose always rolled in. A little discussion revealed that we needed the lower fin surface for take-off to counteract the slip-

stream force on the upper fin. It worked!

Here is the flight schedule: For normal flying use the "drop-out" launch. Always fly this model from the exact down-wind side of the circle. Hold the model by the wing tips in a climbing attitude of 30 degrees. The pilot has full "up" on the stick as he signals release. Don't throw the ship. Just drop away your hands. It will fly out O.K. The pilot must be ready for anything as the model accelerates. We soon found that 26-ft. lines were too short. You can fly easily on 40-ft. Nylon lines.

The lower fin usually flies off the first time around, but if not it will scrape off on landing. Don't expect much of a glide. You will note the ship is trimmed nose-heavy, for easier VTO's. This delta will loop and fly inverted.

VTO's are easiest in winds of 10 to 15 mph. The motor must be running at peak rpm. Be careful not to upset the model by pulling on the lines just as it is released.

Ceramic Engineer

(Continued from page 41)

used in making building brick, which wouldn't last long in a Pittsburgh mill. But don't think the manufacture of building brick has stood still since ancient history. Here the ceramist is required to compound the right mixtures of clay, where more than one kind is used, see that necessary chemicals are added, regulate the heat and the drying time. In any of the three main processes, whether the moistened clay is put through the dry-press, stiff-mud or soft-mud process to form the individual brick, the drying or hardening must be carefully watched. So must the actual firing, in the kiln where heat from 1800 to 2300 degrees F. bakes the clay into hard finished brick. In the tunnel type kiln the dried bricks are loaded on the cars of a train that pass through a tunnel with varying temperatures, so that by the time each car emerges from the other end, its contents have gradually been subjected to maximum temperature and then cooled down.

Dink may not know it, but clay paving blocks of a semi-refractory nature were recently tested for use on runways employed by jets and rockets. The hot gases generated by these damage ordinary concrete paving to a dangerous point.

The leading star of the ceramic show might be called glass. Bringing in gross receipts of more than two and a half times the "take" of any other ceramic product, glass has the spell of magic. It can dazzle with beauty, act as strong as steel, be as fragile looking as an almost invisible thread. And right now the little lady is breaking in a dozen new acts, planning a dozen more.

They say it all started when a group of Phoenician sailors, about 5,000 years ago, were marooned by a storm on a Mediterranean beach. Unable to find any stones to support their cooking pot, they used several of the soda blocks still in their wrecked boat. And after the fire really got hot they were amazed to notice a thick liquid oozing out of the flames; the heat had fused the sand and the soda and produced the first glass. . . . But think how surprised those sailor boys would be today, if they could see the glass lamp bulb now in development to replace the present coil-wire heating element in electric stoves. Cooking with light!

You'll learn plenty about the chemistry of glass in a ceramic course. The formula of raw materials may make use of almost any combination of the known

elements, but the basic one involves silica, lime and soda. For silica, the chief ingredient, you may read sand, which is full of tiny particles of silica in its natural form—quartz. Limestone gives the subsequent product strength, keeps it from dissolving. Soda ash is the flux for the mixture, helping the hard silica to melt.

Let's visit a glass factory and watch as these ingredients are made into glass products. First they are ground to a fine powder and mixed. The mixture is fed into one end of a huge, long tank, where sweeping jets of flame from a long furnace on either side cause the powdered minerals to fuse and flow. A cross-wall near the opposite end of the tank checks most of the impurities, and the molten glass passes into what amounts to a second tank for further "fining." Then in the continuous process it is allowed to flow out of several openings at this opposite end where the real manufacturing process begins.

At one opening workmen collect "gatherers" of the sticky stuff on the ends of long hollow pipes, for use in hand-making operations of items that can't be fashioned by automatic machinery. (This involves various degrees of mouth-blowing.) From another opening the molten glass is blown by compressed air into spinning molds to form hundreds of different kinds of objects. It's a combination press-blow method whereby a jet of air partly pushes up the glass about the same time as a mold wraps itself around it.

This "blowing by machinery" has put man's oldest method of forming glass on an automatic basis. Most glass jars and bottles are made in this manner. It's been quite a few years since electric light bulbs were blown by humans. The "ribbon machine" developed by Corning in 1926 now press-blows 1,000 bulbs a minute. It also pops out Christmas tree ornaments and radio tubes.

At a third opening, blades scissor off gobs of the sticky compound, which is then fed to an automatic press. Down comes a plunger into a mold form and bingo!—a tumbler or a deep glass casserole dish in the rough.

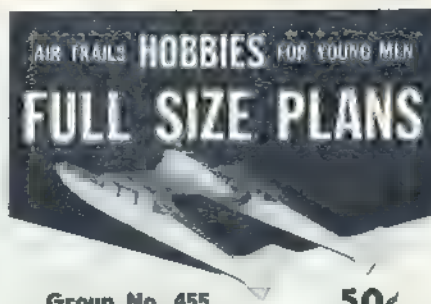
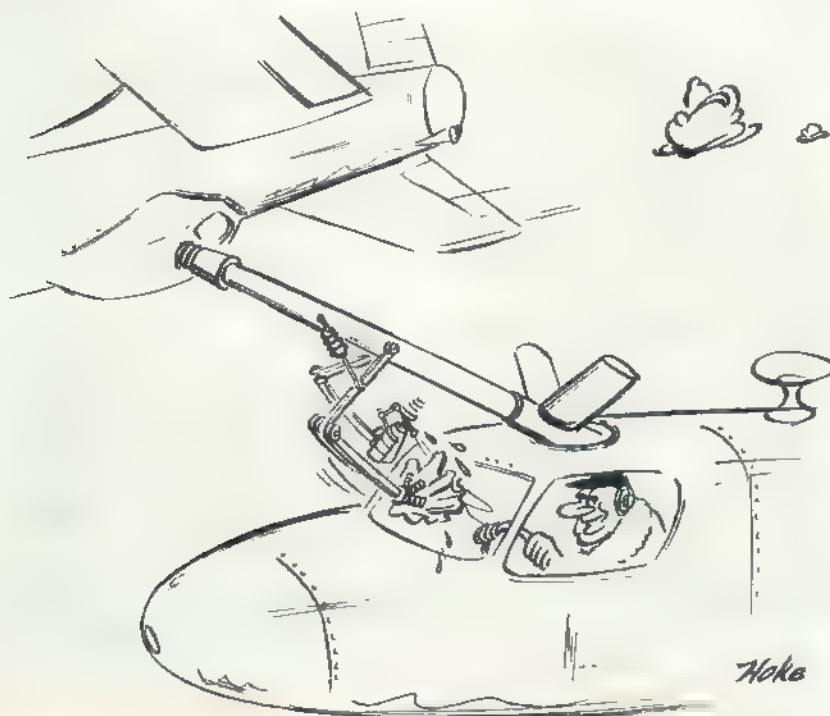
From still another opening at the end of the tank molten glass is drawn away by machinery in endless tube fashion. (Of course, several processing steps at this and other openings may cool or again heat the mixture so it has the right flowing qualities for a particular purpose.) The "drawing" method in glass manufacture is extremely versatile. It can be either horizontal or vertical. Done vertically, the drawing can produce sheets of window glass. Horizontal drawing may feed the material into a machine that makes neon tubing, or into another that produces glass thread—so fine it takes 100,000 yards to make a pound.

Does it all sound nice and automatic? That's only for the visitors, bub! Behind the product and the process is the skill of the glass technologist, the trained engineer. This includes research, that has made possible new uses for glass and is developing many more. Today glass brick and glass furniture are finding wider favor. Now being proved are glass electric toasters and clothes dryers; glass that conducts electricity. For the chemical industry, a glass pump has been developed to replace regular acid pumps which couldn't take it.

About eight years ago they came up with photosensitive glass. With this you can take three-dimensional photos in color, all engrained right in the glass which you can then set up on your dresser as a very realistic picture. This type of glass is now being used in the photo-chemical process in printing—a glass plate instead of a metal one.

All these examples are developments of the Corning Glass Works, known as the world's largest maker of technical glass and leaders in research. Among other items this American firm was responsible for Vycor, a super heat-resisting glass more effective than the company's earlier Pyrex. The toughest glass ever made, it can be heated red-hot and plunged into cold water without breaking. Able to stand up to 1800 degrees F., it is a boon in manufacturing, as high-frequency furnace lining and the like.

But the opportunities for the ceramicist interested in glass are not confined to
(Continued on page 75)



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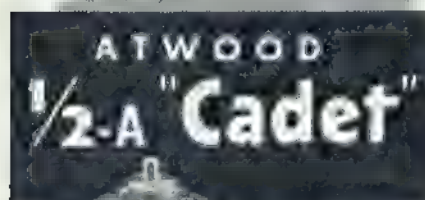
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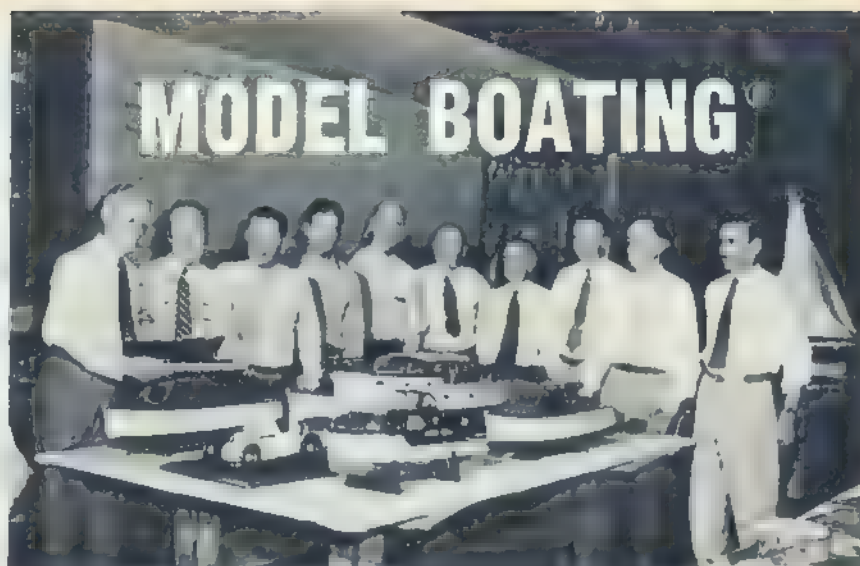


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and glow, sail and scale,
shelf and operating craft**

■ These photos here this month serve as a reminder to you that model boats, either powered or sail, can be entered in the model division of the big annual Ford Industrial Arts Awards competition. See the lead article in the February issue of *ATH* for details.

We hope you keep in mind all the fine boating material that appears in the 1955 Edition of the *Air Trails Model Annual* which went on sale late in February. Items of special interest include a 29 1/2" Staten Island Ferry well suited to radio control installation. Beam is 7 1/4 inches; overall height is 8 1/2 inches. Can take steam or electric power.

Also in the *AT Model Annual* is a fine pictorial on model boating titled "The Wonderful World of Model Power Boating." Illustrated are such unusual models as the 6-foot Free-DeGear steam powered R/C tug; a twin Dyna-Jet powered speedster; Bill Baughman's portable starting stand for small boats; 7 foot submerging subs and on and on.

If you can't find the *Model Annual* in your neighborhood it can be ordered from *Air Trails Model Annual*, 304 E. 45th St., New York 17, N.Y. 50¢ post-paid in U.S. and Possessions, 60¢ in Canada and \$1 elsewhere.

Judging from the news a lot of the boys are laboring in their shops on new ships

or refurbishing old ones for the coming season—how about a line to let us and the other readers know what you are up to?

The spokesman for the Southern California Model Power Boat & Yacht Assoc., Bill Baughman (5738 Deane St., Los Angeles 43, Calif.) tells us he has heard of several new boat clubs, among them one in the Sepulveda area, and another in San Diego; hope to have news of these groups next issue. Bill can supply info to all boatmen around Los Angeles who want to join the S.C.M.P.B.&Y.A.; we note that dues are now payable the first of January of each year, and the cost per year is \$4.25.

I.M.P.B. Assoc. went into 1955 determined to spread the gospel of power boating even more widely than they did in '54. We learn that six new clubs have affiliated with this International organization since last July, bringing the total to 16 to date, and more are expected to join shortly. There are 354 members—quite a few of these are individuals, of course, and not members of the affiliated clubs mentioned above. The new rules book is expected momentarily, and should do a lot to stir up interest in contest power boating of all types, since the officials have tried to include classes and categories for all size boats and motors. Thanks is given to the Honorary Contributing Members; these individuals are members of the hobby industry—dealers, distributors and manufacturers—and their help, both moral and financial, has been of the greatest value to the Association.

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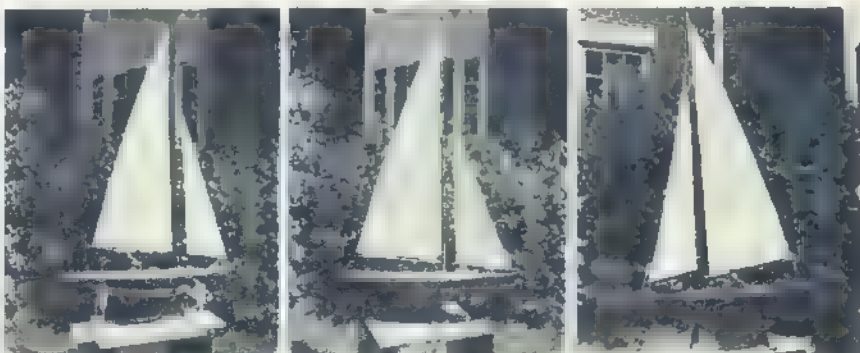
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headquarters, and also in collecting news from members. Publicity Directors have been appointed to cover the four IMPBA Districts of the U.S. As listed here last month, Bill Baughman is P.D. for District 3, and we'll give you the names of the other three Directors and their territories as soon as we get them from headquarters.

Some new official items will soon be available from the IMPBA, including the General Competitive Rules Book, the Official Speed Chart, and there are IMPBA decals for your boats. There will be a lapel button ready soon. Clubs or individuals who wish to learn more about this group or to join, may get full information from headquarters at 2991 Garland Ave., Detroit 14, Mich.

Speed Records in the various IMPBA classes are listed as follows: Class A Steam—Michael Succards (Detroit) 68.18 mph; Class A Gas—Max Biederman (New York) 69.23 mph; Class B Gas—Charles Watkins (Chicago) 81.81 mph; Class C Gas—Walt MacWilliams (Philadelphia) 81.44 mph; Class D Gas—William King (Toronto) 84.90 mph; Class E Gas—Ralph Richards (Philadelphia) 84.50 mph; Class F Gas—Charles Baxmann (Detroit) 63.82 mph. An explanation of these classes may be found on page 62 of the February issue of Hobbies For Young Men.

Speaking of classes, we have a query from Mike Gilliland (8-C Lake Tapaingo, Blue Springs, Mo.); says he has read in ATH where speed boat racers have made from 45-80 mph with a Class B engine and he wonders how come. Well, Mike, it isn't the Class B that is used in model planes (which is up to about .29 cu. in. in displacement)—the B class of the speed boaters calls for engine of 15 c.c., which is .915 cu. in. You might get away with a Class B airplane engine in that 20" plastic hull, but it would take careful mounting and balance to keep the craft on the surface. Note that the Class F speed boat record listed above calls for an engine not over 5 c.c., which is .305 cu. in., and just above your B plane engine.

A finishing hint comes from Art Sullivan (8 Lind Lane, Wyoming 15, Ohio) who suggests that all parts of the hull be covered with heavy Silkspon, over which

go 4-6 coats of filler. Next comes 20-30 coats of auto lacquer, followed by up to 15 coats of colored dope. Wow! Sounds like an awful lot of work, but as Art says, this builds up a plastic shell that resists wear and tear.

Tiny lamps are wanted by Charles Cheahier (5121 Jefferson, Houston 23, Tex.) who saw the ideas on lighting up a model given in this Column in the Jan. 1955 issue. Charles says he can't locate "grain of wheat" lamps in his city; he also wonders if these lamps are made with a screw base.

We believe that such lamps may be had from Brian the Radio Man (64 Dey St., New York City, N.Y.). We have seen screw base lamps in this size, which were intended for surgical instruments, but don't know if sockets are generally available. You could probably make your own socket, though.

Simple R/C boat has been requested by several readers, and we suggest that they look over the one described on p. 161 of McEntee's "Radio Control Handbook." Based on the Sterling 19" B3 kit, the boat is driven by a Distler motor and eight pencells connected in series-parallel for 6 V. Steering is by a Southwestern proportional actuator, and boat can be guided with real precision. It doesn't travel at breathtaking speed, of course, but will run for hours on the pencells (we have used hearing aid cells—Eveready 1015E—which give much longer life than the common variety). Operation of the boat requires a pulser at the transmitter; there are several of these on the market, and others have been described in ATH. Receiver is a Mini-Mac, and the transmitter a Super-Aerotrol, latter being operated on 67 1/2 V., which has been found plenty for several hundred feet range.

In this same book is a control system which would be ideal for twin-motor electric drive boats, giving steering, start, stop and reverse.

This particular arrangement is shown fitted into a model caterpillar tractor, but could be adapted to a boat exactly as it is shown. Steering would be accomplished by stopping one drive motor or the other, and for this use, the props should be placed as far apart as convenient. Two of the Distler motors

(available from Polk's Model Craft Hobbies) in a boat of about 24" length, and driven by four large flashlight cells, would give fine results.

Commercial Notes. Builders who want a large slow-speed and very reliable engine should check the notes in R/C column this month regarding the Forster .99.

Book on model boats announced by The McBride Co. Inc. (200 E. 37th St., New York, N.Y.) is titled "Building and Sailing Model Boats" and was written by Walter A. Musciano. It's a cloth-bound volume and covers all types of models from a three-masted schooner to an R/C cabin cruiser; also a submarine, LST boat, etc.

Three new models are available from Craft Models (754 Main St., Fitchburg, Mass.). "Speedliner" is a prefab runabout intended for electric or glow outboards; price is \$1.95. "Deluxe Runabout" is another outboard job, has completely preformed 21" hull, costs \$3.95. "Crackerbox" is a 15" inboard model of the racing hydro type, and kit sells for \$2.95. All kits are prefab, of course, and feature diecut balsa and mahogany parts.

Ceramic Engineer

(Continued from page 73)

glass as such. Today another magic word in ceramics is porcelain enamel—which is a glassy coating applied to a metal, especially steel. How? First the mixture of glass and other materials is melted to a liquid, which is poured into cold water to shatter into tiny pieces. This "frit" is then ground up and mixed with clay and water and coloring matter into a mixture that is sprayed onto the metal, or the metal object is dipped in it. A trip through an oven melts the coating into a smooth layer of enamel, as on a washing machine.

Porcelain itself (porcelain being high-grade white clayware) has long been a vital part of much electrical apparatus, to insulate and support connections. "... Also," reminds Westinghouse's President Gwilym A. Price, "almost every radio and TV set and appliance contains one or more pieces of porcelain. Millions of dollars are expended each year by

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▶▶▶▶▶ \$5000.00 Cadillac is First Prize in Monogram Contest. How would you like to win a \$5000.00 Cadillac, just for writing a short letter? See the Monogram Models announcement in this issue. It's about their two new model Cadillac kits and the real, honest-to-goodness Cadillac Coupe de Ville they are giving away. There are many other prizes too, including a \$1,000.00 Savings Bond Second Prize, just for telling in 25 words or less what you like best about the Monogram Cadillac.

▶▶▶▶▶ 20th Annual National Essay Contest sponsored by the Ladies Auxiliary to the Veterans of Foreign Wars. \$2,000 in cash awards (1st prize, \$1,000 and gold medal) to high school students for best essay not over 1,000 words on subject "What Civil Defense Means to Me." Also local and state awards. Contestants first submit entries to local Auxiliary, which submits to State Auxiliary; National winners chosen from State winners. Deadline for local entries is March 18, 1955. If there is no local Auxiliary in your town, your school or town paper may act as sponsor. Have them contact National Headquarters of Ladies Auxiliary to the Veterans of Foreign Wars, 406 W. 34th St., Kansas City 11, Mo.

▶▶▶▶▶ National High School Essay Contest sponsored by Advertising Federation of America and local member Clubs. Grand Prize \$500 and free trip to Chicago to attend Federation's convention June 5-8, 1955; other cash awards plus local prizes. Essay must not be over 1,000 words on subject "How Advertising Affects Our Lives." Contest restricted to those cities and areas having member Advertising Clubs, which conduct local contests that in turn lead to national contest. Contact local club for its closing date. Nat'l contest closes April 18.

▶▶▶▶▶ 5th Annual High School Essay Contest sponsored by National Sales Executives, Inc. Boys' division: \$1,400 in cash prizes for best essays not over 1,000 words on subject "Selling as a Career." (1st Prize \$1,000 and all-expense trip to NYC.) Closing date for these national awards is April 1, 1955.

▶▶▶▶▶ Industrial Arts Awards annual competition sponsored by the Ford Motor Co. More than 1500 individual awards valued at \$50,000 are given each year. Open to school students in grades 7 through 12 enrolled in shop, drawing or printing courses. For information write Industrial Arts Awards, Ford Motor Co., 3000 Schaefer Road, Dearborn, Mich.

▶▶▶▶▶ National High School Photographic Awards open to any high school student. Total

of 256 prizes amounting to \$5,000 in cash. Ends March 31, 1955. Details on entering from National High School Photographic Awards, 343 State St., Rochester 4, N. Y.

▶▶▶▶▶ Fisher Body Craftsmen's Guild sponsors car design and model building contest \$20,000 in scholarships plus numerous state and regional awards. For details write Fisher Body Craftsmen's Guild, General Motors Bldg., Detroit 2, Mich. Closes June 1, 1955.

▶▶▶▶▶ First annual competition for papers on "Upcurrents" offers a total of \$400; sponsor is the Municipal Foundation, Inc., the American Meteorological Society and the Soaring Society of America are cooperating agencies. Deadline for entries is May 1, 1955; inquiries should be addressed to Dr. Paul MacCready, Jr., 1202 E. Green St., Pasadena 1, Cal. Glider pilots and free flight modelplane flyers are in a unique position for making appropriate observations, but anyone may enter.

▶▶▶▶▶ 7th Annual National Employ the Physically Handicapped Essay Contest. \$2,000 in cash prizes (plus transportation and expenses to Washington, plus local prizes or scholarships). Closes March 18, 1955. For details write to the sponsor, The President's Committee on Employment of the Physically Handicapped, Washington 25, D. C.

▶▶▶▶▶ Fourth Annual Science Achievement Awards for Students, conducted by Future Scientists of America Foundation and sponsored by American Society for Metals. Program of 104 awards totaling \$5,000 for projects in science and mathematics, and open to any student in grades 7 through 12. Three divisions according to the grade you're in, and you compete only with other students in your geographical region. Closes May 15, 1955. For information, write to Future Scientists of America Foundation, 1201 16th St., N.W., Washington 6, D. C.

▶▶▶▶▶ Annual Scholastic-Anasco Photo Awards Competition offers \$1,260 in 42 cash prizes for 14 Picture Divisions with a \$50 top prize in each division. If picture is taken on Anasco film a National cash prize is doubled. Closes March 15, 1955. One tuition-paid photographic scholarship is offered to Art Center School, Los Angeles; value of this is \$550. For details write Scholastic-Anasco Photo Awards, 33 W. 42nd St., New York City 36.

▶▶▶▶▶ \$50,000 worth of sea and lake ship-board cruises, plus additional awards including Defense Bonds in some localities for high school student winners of up-to-1,000 word essay contest on "American Ships for Trade, Travel and Defense." 25 trips in all. Closes March 31, 1955. Sponsored by the Propeller Club of the United States, 17 Battery Place, New York City 4. Write for info.

▶▶▶▶▶ National Poppy Contest sponsored by American Legion Auxiliary. \$100 prize in each of three classes: students in grades 4-6, 7-9 and 10-12. Contact local A.L. Auxiliary Unit for details. Closes May 1, 1955.

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Ceramic Engineer

(Continued from page 75)

Westinghouse alone for this material... much research and development is needed to improve the characteristics of porcelain and other ceramics materials for electrical use. Westinghouse is appropriating development funds yearly to sustain and constantly improve its porcelain products."

Porcelain enamels of a highly refractory nature are now going to town in the jet field. In fact, it might be said that the use of ceramics in aviation is at present only in its first stage. Enamel coatings have been applied in the exhaust stacks, to protect the metal from gas corrosion and heat effect. They are used as linings for the jet engine, for parts that contact the combustion chamber—and in rockets as well. The higher the operating temperatures of today's powerplant, the greater will be the ap-

plication of ceramics in aircraft. For that matter, successful vitreous enamels have been developed to protect the metal skin of the craft itself, from heat caused by air friction. Some of this work, on aluminum and titanium and even magnesium, has been done in the Ceramic Engineering Division at the University of Washington.

Once you start on your ceramic education, you'll bump into new developments at every turn. A potent word in our current vocabulary is "electronics." M. J. Kelly, president of Bell Telephone Laboratories, has observed: "The importance of vacuum tubes in our electronic age is a matter of common knowledge. It is not so generally appreciated, however, that the development of the more advanced types, such as the magnetrons used in radar and the microwave amplifiers used in coast to coast television, were made possible by modern ceramics. We know of no insulating materials with the necessary combination of electrical insulation and dimensional stability for such

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the new SUPER-EAZY PRE-BILT construction combining prefabrication and preassembly. At last you can have prefabrication with performance!

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uses, except the alkaline earth modified steatites and the pure fused alumina created in the early 1940's. . . .

New uses? Ribbón glass, 1,000th inch thick, is taking the place of mica in TV capacitors and other electronic units. You've heard of automation. Ceramics is now part of the act—they're using little ferrite "doughnuts" for memory units in electronic computers.

You don't need to write "atomic energy" a hundred times to remind yourself that "It" and your career are somehow linked, for nucleonics will change tomorrow's world. You might, however, profit by knowing that ceramics will be important in this connection. In a statement on this vital subject Lewis L. Strauss, Chairman of the U.S. Atomic Energy Commission, has said: "The Atomic Energy Commission is very much interested in the uses of ceramic materials to exploit the unique characteristics of nuclear energy. In particular, one of the critical needs today is for the development of materials suitable for high-temperature, high specific-power nuclear reactors. We believe that such requirements can best be met by ceramics. This field of investigation thus offers attractive and challenging opportunities to those who wish to enter it."

In other words, atomic reactors for producing power for industrial purposes, for instance, will entail such high temperatures that ceramic coatings will be needed to keep the metal parts from melting—among other things. . . . And did you know that glass windows for use near atomic radiation are now being made that weigh as much as ten tons and are up to 20 inches thick?

In next month's second half of this article we will cover the nature of the training involved, list the colleges and

universities offering majors in ceramics, give the different kinds of jobs and duties, and present various other highlights in the "unknown story" of ceramic engineering.

Dual Proportional

(Continued from page 53)

should remain open.

A process of tightening the spring a bit at the high rate and loosening it at the low rate will result in a setting where the relay will not pull in at all at the lower rate but will remain pulled in solidly at the high rate. At intermediate rates, the relay will snap back and forth, favoring one contact or the other according to the pulse rate. The elevator actuator should now be connected, and the elevator checked, after which you are ready for a field check and a flight.

The length of the elevator blip may be stretched out more by using a larger condenser, decreasing armature clearance or decreasing spring tension. If you want to operate the system with a small range of pulse rate, you will want a long hold-in time for the elevator relay, and vice versa. The system has not been found critical to vibration, and has been flown with the relays mounted on sponge rubber.

The more mechanically-minded reader might prefer another system we have used to work the elevator relay, and which is shown in Fig. B. Here it will be seen that a pair of auxiliary contacts are attached to the rudder actuator—in this case a double-wing Southwestern, as is the elevator actuator. The contacts supply pulses to the elevator relay and its hold-

ing capacitor, power coming from a small 45 V battery. The pulse diagrams are just the same as shown in Fig. G for the all-electrical system, but in this case the heart of the arrangement is the contacts of the rudder actuator and the way they are adjusted.

Fig. C shows how the contacts are installed; note that the fixed contact is off-center somewhat, and is bent to coincide with the arc of the moving contact. The latter is a piece of .004 shim brass soldered to the actuator arm. A connection to this contact may be made by a wire soldered to the shaft bearing tube. The fixed contact must be insulated on one side only (either side, but top insulation is indicated here); the tip of the moving contact is twisted a bit so that as the arm moves in one direction the tip will ride over the top of the fixed contact, while when it returns, it goes underneath. About 10 degrees twist should do the job. Heavy pressure is not needed, since the current is very low.

After the fixed contact has been attached to the actuator case, wrap the whole thing with Nylon and dope it well. Since there will doubtless be a bit of end play in the actuator shaft, make sure the contacts operate as intended at both extremes of this end play. Needless to say, the contact parts should be smoothed off well with a fine file and sandpaper; the insulation on top of the fixed contact may be a couple of coats of glyptal or even nail polish, allowed to dry well before you move the other contact over it.

A 10,000 ohm blanket control relay was used in this circuit, and the electrolytic condenser must be polarized with its positive going to the 45 V battery positive. The same sort of variable speed
(Continued on page 80)

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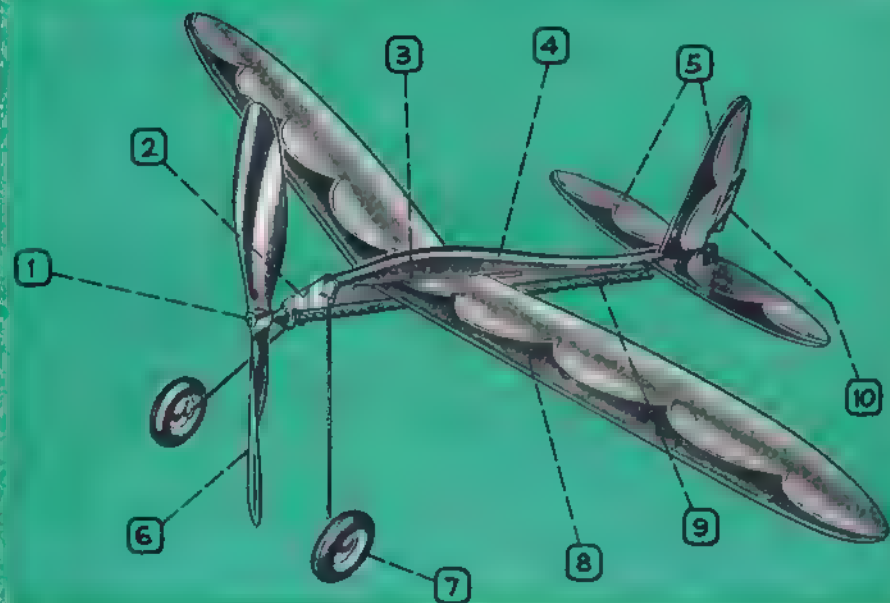
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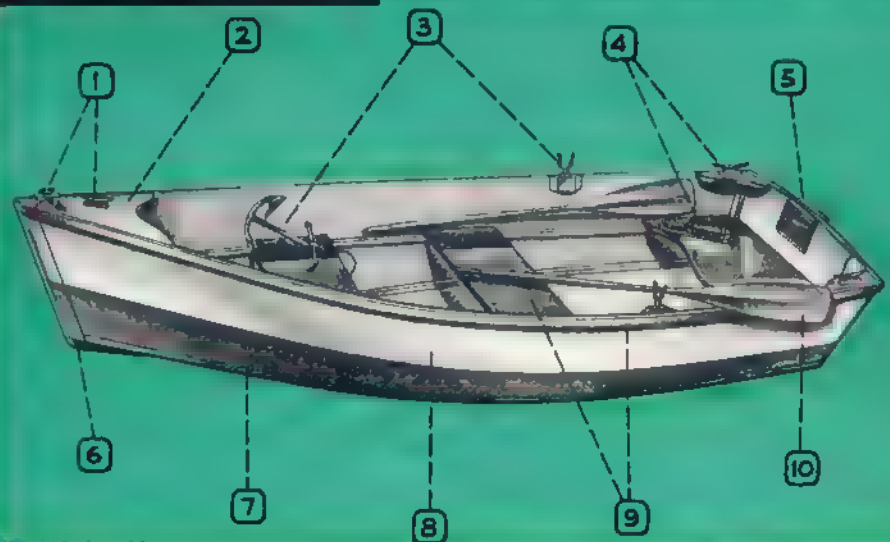
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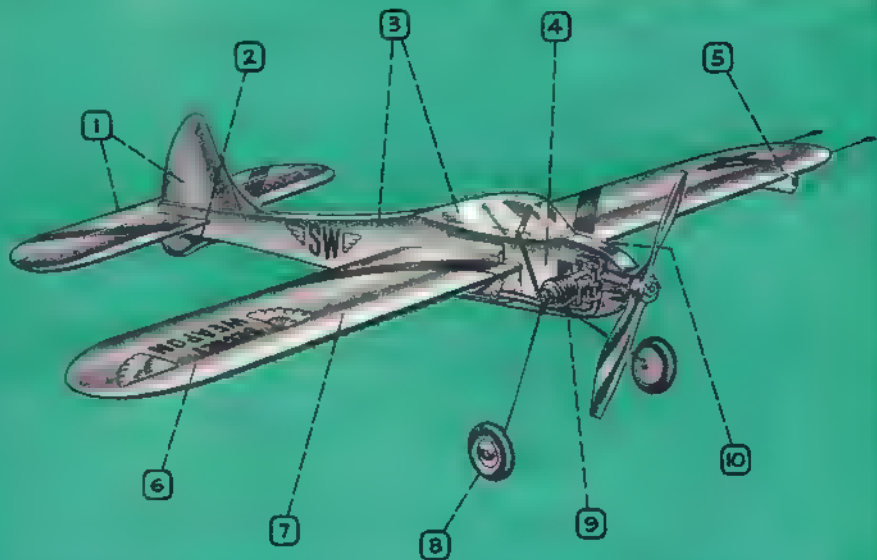
■ Whether you know it as the Jim Walker A-J Aircraft Co., or American-Junior Aircraft, the firm producing this new assemble-and-fly rubber powered "Pursuit" model (above) is one of the world's largest. To be noted are: 1) free-wheeling propeller device, 2) formed metal thrust fitting, 3) wing slot for flight adjustment, 4) shaped, colored balsa motor stick, 5) die-cut, two-color printed tail parts, 6) plastic propeller, 7) plastic wheels, formed gear struts, 8) sweptback, cambered, two-color printed balsa wing, 9) contest quality rubber motor (lubricant supplied), 10) adjustable aluminum trim tab. With addition of "aileron" tabs to wings the A-J Pursuit would be a fine classroom trainer for use in air-age instruction. Plenty of youngsters will soon be flying this one.

■ Developed by Dyna-Model Products Co. of Oyster Bay, N. Y., this 17-inch prefabricated scale skiff (below) has real scale appearance. Highlights include: 1) cast metal chocks, cleats, etc., 2) die-cut balsa breast hook, 3) cast metal anchor, oarlocks, sockets, 4) cast metal cleats, fire extinguisher, 5) mahogany transom pads, 6) shaped inner and outer balsa stems, 7) pre-cut bottom sheets, 8) shaped balsa sides, 9) die-cut balsa seats, transom braces, skeg; fender and chine rails cut to dimension, 10) die-cut balsa oars with shaping instructions. (Model suitable for powering with electric or gasoline miniature outboard engines.) Companion kit to the skiff is Dyna-Models' outboard run-about, a 16" affair scaled 1 inch on the model to 1 foot on the big craft.

LAYTON SKIFF



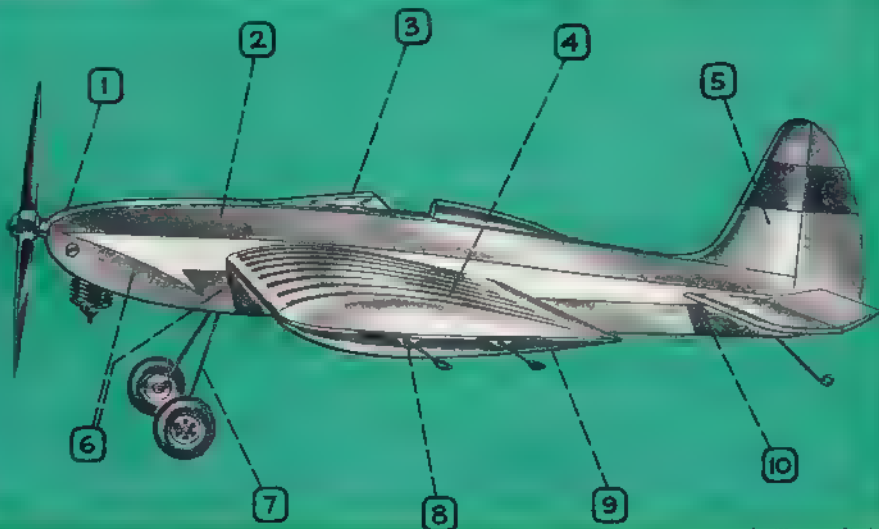
SCI'S SECRET



■ From the ever-expanding stable of plane, boat and car kits offered by Scientific Model Airplane Co. comes the "Secret Weapon" (above), a two-foot-span prefabricated U-control stunt or combat control line trainer. Profile fuselage has good thickness; plans are excellent. Features to observe: 1) die-cut balsa tail parts, 2) die-cut plywood skid, 3) pre-cut balsa profile fuselage and canopy, 4) interlocking pre-cut hardwood nose section, grooved for landing gear, 5) plywood wing guide, 6) decal insignia, 7) one-piece balsa wing shaped to airfoil section, ready for sanding, 8) shaped wooden wheels, formed steel wire landing gear, 9) for .09-.19 cu. in. displ. engines recommended, 10) complete hardware for "U-control" system supplied in kit.

■ Although it calls for only Half-A engine power, Southwestern Model Manufacturers' "Half-A Snapper" (below) stunt-trainer-combat control line plane can offer good performance because of its built-up construction which keeps weight down. Span is 2 feet, wing area is 107 sq. inches. Points of interest: 1) .049-.051 cu. in. displ. engines recommended, 2) die-cut balsa sides, formers and doublers, 3) celluloid windshield, 4) Silkspan wing covering included, 5) die-cut balsa tail group, 6) die-cut plywood firewall, gear support, control base, etc., 7) steel wire landing gear, 8) hardware for control system included, 9) die-cut balsa ribs; spars, sheets, strips cut to dimension, 10) alternate stabilizer location for training or advanced stunt maneuvers.

A/2 SNAPPER



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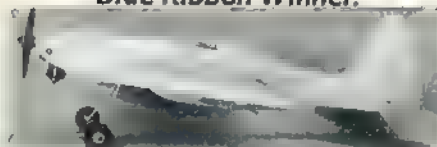
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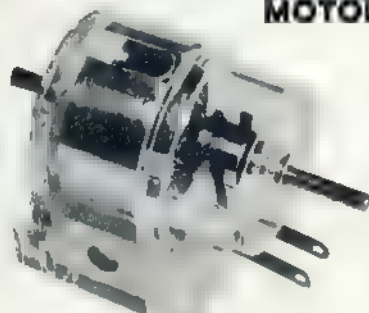
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THESE

FEATURES

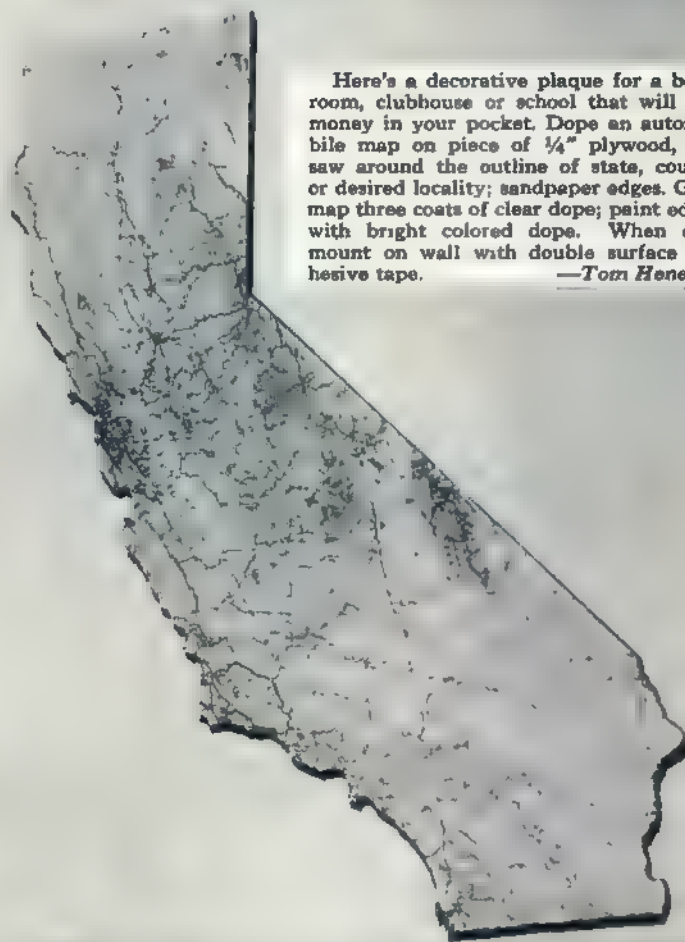
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—Tom Henebry

Dual Proportional

(Continued from page 77)

pulsar is needed for this arrangement. The rudder actuator has stops set to limit movement of the control arm to about 45 degrees each side of center; the linkage is adjusted so that the rudder has an actual movement of about 20 degrees each side of center. The required travel of the actuator arm is shown in Fig. E.

It will be seen that for extreme left the moving contact passes completely over and under the fixed contact on each pulse; however, for extreme right it covers only an area C on the conducting side of the fixed contact. Thus it will be seen that it is not necessary for the arm to go both over and under the contact, as long as a reasonable pulse is sent to the elevator relay for each rudder pulse.

The pulsar must be arranged so that even at full left or right, the actuator arm can travel over about ½ of its full movement; while it might be thought that you won't be able to make sharp turns with such a rudder movement, this "partial" rudder with down elevator will tighten up a spiral in a hurry! Actual elevator area for each plane is difficult to set, but as a starter, make the elevator about 20% of the stab area and use 2-5 degrees of up and down movement.

Hobby Model World

(Continued from page 47)

particularly like to obtain the three-view drawings of the F4U-4 and the F4U-5 that were available at one time from our Plan Department. Any and all material will be of value to him: military handbooks, newspaper clippings, amateur photographs, plans, drawings and similar items. His address: 253½ Brevoort Rd., Columbus 14, Ohio.

Helping Hand. From John Sullivan, club reporter for the Republic Aviation Model Society (RAMS) we get some splendid ideas on how an adult club can assist youngsters in getting started in modeling. All members of the RAMS work for Republic Aviation at Farmingdale, L. I., N. Y.

Last spring the RAMS' president Art Wardell, who is very active in Cub Scout circles, asked a few of the members if they would go out to one of the Cub Scout rallies and put on a display of models and do a little control line flying. This was such a success that it was decided at the following meeting to organize a program of control line flying and to offer this "act" to any organization interested in a demonstration for children's benefits.

Writes Johnny, "We are happy to announce that every weekend last summer and fall we flew demonstrations. Some of the places we covered were Babylon Town Police Juvenile Aid Bureau, opening of a playground at Gordon Heights, Northport Veterans Hospital, Levittown Home Owners Association, Boy Scouts rally, Veterans of Foreign Wars at Mineola and the opening night of the Mineola Fair.

"Our demonstration team—as we call it now—is made up of from 8 to 15 flyers depending on the length of show desired. A typical show consists of a banner tow spelling out RAMS by Manny Sicari, balloon bursting by Barney Barneby, Class B speed by Art Wardell, scale stunt S.E. 5 by Ed Rigney (he really wrings it out!), pickup of a streamer by Jimmy Craig with his 2-speeded Ringmaster and a stunt pattern from a chair flown by Yours Truly.

"This is topped off by a combat session between any two members. We end by bringing out youngsters from the audience and having them fly our club trainer. We have dual control handles for this and with one of the demonstration teams at the controls on one handle we run eight or ten prospective model builders through the circles for the remainder of the afternoon. Along the sidelines we set up a table with free flight, radio and scale models with a member on duty to answer any questions about the different types of models."

Friend Sullivan reports that so far the RAMS have confined their demonstrations to Nassau, Suffolk and Queens Counties—all in or near New York City. Any organization in those areas desiring a demonstration can contact the RAMS through the Republic offices at Farmingdale, N. Y. Address letters to the attention of the Recreation Director. The RAMS expect a solid season of weekend bookings this year, too. Incidentally, there is no charge for these acts and demonstrations.

During the cold winter months the club went indoors to fly Half-A's on 15 foot lines. Combat is confined to Fire-baby entries. PAA-Load is for .049 engine equipped craft limited to 20 inch span, 5 inch chord. Heaviest load carried so far: 24.5 ounces!

Issue Swapper. Richard Nelson, 3230 W. 132nd St., Hawthorne, Cal., writes to let us know how much he enjoys the new look in Air Trails, i.e., ATHFYM. After reading and collecting AT for some 20 years he felt somewhat taken aback when the masthead and contents were changed some 12 issues ago. But now he finds that every page is read and enjoyed as always. Upon taking inventory recently of his collection, Dick learned he had duplicate copies of some issues and was missing others. Thinking that other readers may be in the same predicament, he asked that we print his address (see above) and perhaps other collectors will contact him so they can swap even-Stephen.

Medics Clobber Competition in Stunt. Wonderful report comes in from Lt. George Purvis of the U.S. Army Hospital staff at Fort Carson, Colo. It's all about the Fort Carson Aircraft Modelers' first All-Post meet which was run off between snowstorms! Although the altitude is 5,000 feet and U-control jobs move around pretty fast, none was damaged to the point where it needed major repairs.

About 35 entered in the events which ranged from free flight rubber to scale (Continued on page 89)

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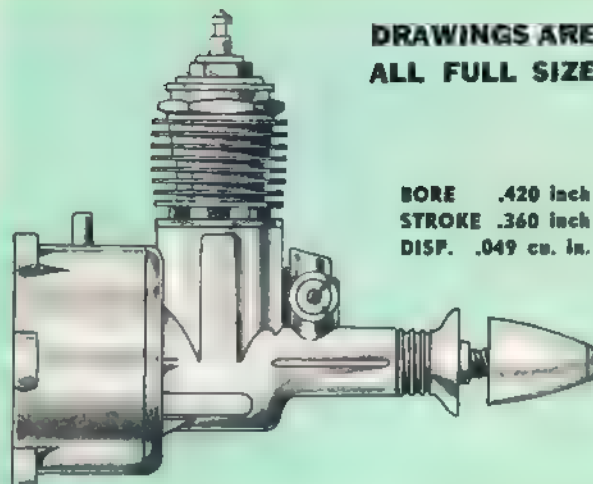
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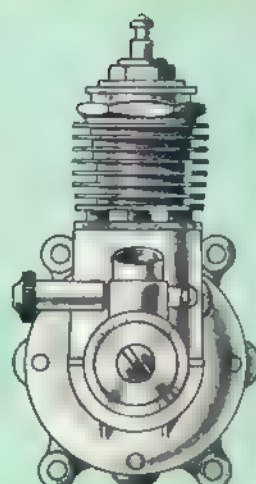
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**"OK" Cub Engines
Welcome "A" to .049 Line**

After the "X" and the "B" Herky, the "OK" Cub jumps back to the top of the alphabet with its New Half-A model "A" powerplant; Nylon fuel tank used

Capable of turning out an incredible number of engines a year, the Herkimer Tool and Model Works Inc., have added still another new member to the largest family of model engines in the industry. With the new arrival .049A, there are now four different models available in the firm's line of Half-A glow engines.

This latest version incorporates the extended drive washer that proved so popular on the .049B but mounts radially as did the .049X. It is easily distinguishable from these earlier models by its unusually large red Nylon plastic fuel tank. This tank, the largest sized plastic tank ever made for an .049 displacement engine, allows a running time of nearly three minutes with a standard propeller. It mounts directly to the crankcase by four machine screws.

The rear of the tank has four integrally molded lugs which form the radial mounts. Due to the large flat mounting surface of the tank and the four bolts used in attaching the power unit to the firewall of the model, this engine runs exceptionally smooth. We feel that it is this smooth, vibrationless running accomplished by more solid mounting that accounts for the increase in rpm over the two earlier engines mentioned.

No gasket is used between the tank and the engine crankcase. This seemed rather odd at first but upon closer examination of the tank we discovered a very thin raised bead centrally located

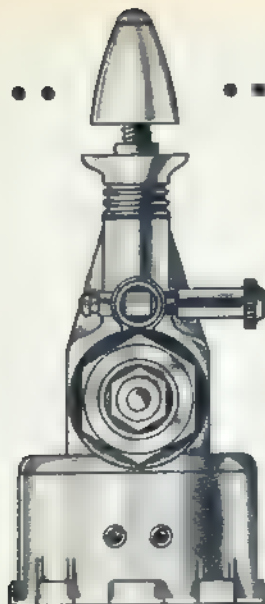
on the wall thickness and running around its entire circumference. Due to the slight compressibility of Nylon this raised bead forms a perfect seal when under pressure and thus eliminates the need for a separate gasket.

Design-wise the .049A uses a square rotary valve in the crankshaft. The inner surface of the carburetor is round at the top but in true venturi fashion is narrower at the throat, at which point the needle valve body passes through it. It widens out again at the bottom where it meets the rotary valve. This design accelerates fuel flow and coupled with the increased valve area results in increased power and easier starting.

The one-piece counter-balanced crankshaft is hardened steel, ground to a smooth bearing surface. It is knurled on its forward end to fit and lock the aluminum drive washer in place. It is internally threaded in typical "OK" fashion to receive the propeller shaft bolt.

The cylinder barrel is machined from solid steel and threaded externally on the lower end where it enters the main aluminum crankcase casting. It is threaded internally at the top to receive the machined aluminum head. Three copper gaskets are used to seal head compression. Adjustments can thus be easily made by simply removing gaskets as desired.

The fuel transfer ports, patented by Herkimer, are incorporated in this latest



design. This system of porting is unique in that the fuel enters the cylinder through the three exhaust port bridges evenly spaced around the cylinder barrel; full 360 degree porting is thus achieved.

The connecting rod is aluminum and rectangular in cross section. The wrist pin is steel and slightly shorter than the diameter of the piston. It is push-fitted in place and non-floating, thereby eliminating the need for wrist pin pads.

The piston is machined from steel. It is hardened and ground and is slightly domed on top.

The brass needle valve body has been rounded at its fuel line end. A small point, perhaps, but nevertheless an improvement. Sliding a fuel line, especially small I.D. plastic tubing, over it is now much, much easier.

A 5 1/4 red plastic propeller of high impact styrene and an aluminum spinner are also included with the .049A.

Running tests were made with the propeller supplied and "OK" Cub fuel. This fuel was developed to give best all-around performance in Cub engines and is recommended to give quick starts and long engine life.

The test engine started quickly and easily. The needle valve adjustment is quite broad and non-critical. Due to the extended drive washer, adjustments to the needle valve can be made without fear of skinning one's knuckles.

Priming directly into the exhaust ports with a cold engine gave faster starts, but only by one or two flips. However, by repeatedly starting the engine hot it was found that choking was the faster of the two methods.

Highest rpm recorded during the test period was a little over 14,000. This speed was reached after the engine had been run at moderate speed for a little over one-half hour. Three minutes is a long time per tank for a brand-new engine to be run even at moderate speeds. Therefore we suggest that the tank be only half filled for the first ten minutes of break-in time, or until the engine shows no signs of overheating.

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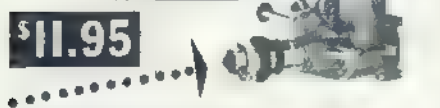
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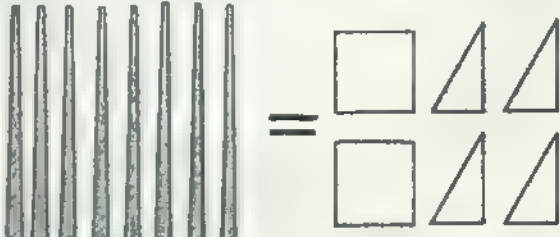
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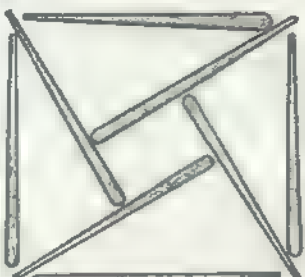


Here's a bit of a geometric trick submitted by Paul R. Pucker of Houston, Pa. With eight toothpicks construct two squares and four triangles, without breaking, splitting or bending the picks. Sound complicated?

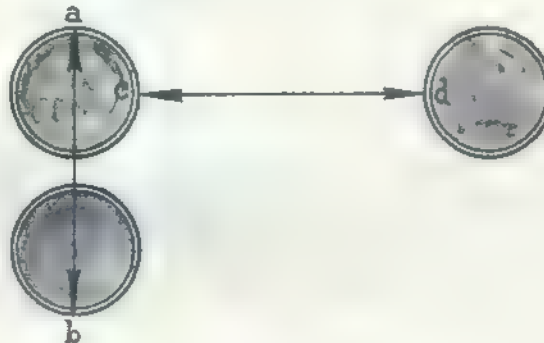


The Solution

How it's done is shown on the right. Four toothpicks form one square, the four others inside are radially disposed at 90° angle to each other, forming the other square and four triangles. Q. E. D.!



How good are you at judging distance? asks Dee Robson of Bell, Calif. Place three coins as shown in drawing so that distance "ab" is same as "cd" and then ask audience to guess which distance is greater. The usual answer is "cd."



Wrong. The distances between the inner edges of coins "a" and "b" is the same as between outer edges "c" and "d." This trick is based on optical illusion—an "eye-fooler."



What's Your Favorite Trick? Cash Prizes!

We're asking readers to send in their favorite original magic tricks. Air Trails HOBBIES will pay \$25.00 for first one received and illustrated here. All you have to do is furnish us with a description of your favorite feat, include rough diagram or sketches if required. Send to "Trick Stuff" Dept., c/o Air Trails HOBBIES For Young Men, 304 East 45th St., New York 17, N. Y.

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Letters

(Continued from page 11)

Stine, I met him at the co-op banquet in July at the opening of the program. He was the principal speaker and we all enjoyed his talk. I would like to take this opportunity to urge all high school students to look into the co-op plan. If you are planning to be a double "E" or physics major, you can't beat this program for practical experience.

Thomas Wolff, San Angelo, Texas

Widespread Coverage . . . I would like to congratulate you on your magazine. I have been a steady subscriber since 1944, and have every issue, including the annuals, since then. I have noted steady improvement in a magazine that was tops back in those days. Frankly I cannot see any more room for improvements the way you publish the magazine now, with such widespread coverage on all hobbies.

Robert Steben, IM03, Norfolk, Va.

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Streamline	
1 1/2" Diam.	29c Pr.
1 3/4" Diam.	39c Pr.
1 1/2" Diam.	39c Pr.
1 3/4" (Pneum.)	69c Pr.
Pneumatic Ballon	
1 1/2" Diam.	69c Pr.
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2 1/2" Diam.	1.19 Pr.
3" Diam.	1.39 Pr.

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Chrysler Imperial Sedan
Jaguar XK120
Nash Rambler Convertible

Stinger Stunter
P-T Trainer
Viking
Folly 1/2A
Combat Sky Box

Shorpy Stunt Plane
Vampire
Vixen Stunt Ship
P40F Warhawk
F & B Hinges

F-B MODEL AIRCRAFT—3240 LARIMER—DENVER 5, COLO.

SEE MORE GYRO SPECIALS ON OPPOSITE PAGE

TRANSMITTER, RECEIVER & ESCAPEMENT including Tubes & Relay. No License Required.

GYRO PRESENTS 2 NEW KITS

A Powerful 4.8 Watt Transmitter & Super-sensitive Receiver for 27 1/2 Mc. Radio Control. NO KNOWLEDGE OF RADIO NEEDED TO GET WORKING FREE WITH ABOVE BAKELITE ESCAPEMENT. (Not a Kit)

NEW GYRO Presents Model XT DELUXE TRANSMITTER

Operates any 27 1/2 Mc. REGULAR or AUDIOTONE (WAG, Babcock) Receiver. The Only high powered Transmitter offering both Standard & Audiotone Modulation your choice by a flick of the switch. Incorporates all features of the famous MAC II Model X1 with 5 Watt power! Housed in beautiful 12"x7"x20" case with built-in Storage Battery, Vibrator Supply, Gyro-Magic Tuning Indicator, Meter, Antenna with Ground Plane Booster, Battery Charger, Keying Line, Dummy Antenna. Load tubes, crystal, etc. Operates anywhere! Guaranteed

\$48.50

COMBINATION R/C TEST METER. Checks Field Strength: 27 1/2 Mc. resistance: Volts 0-5, 50, 500, Milliamps 0-5, 50, (1 Ma. Movement) Molded Case Sturdy... **\$14.95**

GYRO'S NEED RELAY—permits 6 controls with circuit diagram... **\$14.95**

GYRO'S TONE MODULATOR—converts any transmitter for 6 separate controls complete, assembled, tested... **\$12.45**

AUDIO TONE MODULATOR—Plugs into Transm. gives audio signal, tested, with battery. **\$3.95**

STORAGE BATTERIES

6BB4-A, 2 Volt, 3"x4"x5 1/2"—27 Amp. Hours... **2.75**

NTB, Mini, 6 Volt 2 1/2"x1 1/2"x5 1/2"—27 Amp. Hours... **2.45**

New! 2-0 Volt Battery Charger, wired & tested... **4.95**

BATTERY CHARGER KIT—2-6 Volt

CHARGER FOR DRY BATTERIES—Use 1 set of A & B

It's all season! Recharges all 1 1/2 to 90 Volt

VIBRATORS, 6 Volt & 35, 2 Volt Synchronous

METER JACK, open circuit... **30**

Closed circuit... **35**

MINI PLUG & JACK, for metering, etc... **15**

New Submini, CLOSED CIRCUIT JACK & PLUG

Bakelite BOARD for Receivers, 250; RF CHOKE

SWITCHES Toggle 250; 30c. Slide Switch

KEYING SWITCH, remote new micro "click" type

POTENTIOMETER, mini 10,000 or 25,000... **45**

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CONDENSERS and RESISTORS, most sizes... **35**

CERAMIC TRIMMERS, 5-50 mmf., or 7-45 mmf.

PADDER For single single or Mini Mac Sels... **25**

VARIABLE CONDENSER, air type, screwdriver

chart 100, 125 mmf 75, 15, 25, or 50 mmf

RECEIVER PLATE COIL CTC, with all iron core

Wound for Lorens, R. Single, Johnson Mini Mac

NEW TUBES. All Types Available—LOWEST PRICES

LONG LIFE RK-41 Tube in stock for GYRO Kits

XTALsides 75 KFC-1 95 253 51.25

154 150 1V8 190 384 1.89

155 150 3A4 85 384 1.85

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157 150 2Q4 150 384 1.95

158 150 2Q4 150 384 1.95

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GYRO ELECTRONICS CO.

325 Canal St., New York 13, N.Y.

Trick Pix

The "outboard racer" by Jean Y. Michaud of Quebec, Canada, is a good example of ingenuity. With ordinary cardboard and clever use of lighting a three-dimensional effect is achieved. Ideal for Xmas cards.

CASH IN WITH YOUR CAMERA -HOW TO WIN "TRICK-PIX" CASH

\$25 cash award with each trick picture used here. Submit as many different entries as you wish; none should be less than 4 by 5 inches, and preferably 8 by 10 in. glossy prints. We will return all photos submitted but cannot accept responsibility in case of loss or damage. Pictures may be on one-dimensional subjects (people, inanimate objects, cartoon caricatures, etc.) or can be table-top full-dimensional scenes. Give data on camera used, film, exposure, developing, paper, etc.

"SUPERSONIC FUELS"

the champion fuels of the 1953 Nationals—won more first places than any other brands. Accept no substitutes. "100"—\$3.50; Ultra Gie—\$3.70; "1000"—\$1.00 per pint.

RADIAL MOUNT

FOR .19 AND .23 ENGINES

Rear view of .19 shows mount ring installed. The three mounting holes are the same spacing as mounting bolts on .23 and .32 engines.

Price \$3.00

Also available for the .15 at \$2.75.

WHEELS

The most streamlined wheels available today—low drag, light weight. Solid aluminum hubs can be drilled out to fit larger axle if necessary. Available in four

1"..... \$1.15 each 2"..... \$2.25 each
1 1/2"..... .20 each 2 1/2"..... .20 each

K & B SHUR STOPS

Now available at your dealer's, a new redesigned set off valve for the same price—only \$3.75.

K & B MANUFACTURING CO.

224 East Palmer St., Compton, Calif.
Nevada 4-4141

Everything Under Control

(Continued from page 69)

ceiver in a coming issue. Briefly, it gives audio selection of two channels, and as an added bonus, if you send the proper tone between the high and low, you can work both channels at once.

The set has five sub-miniature tubes and weighs about 5 oz. complete with relays. There are no special parts required, the AF selection being obtained by tuning the relay windings. The version which Bonner used to take second at the Nats will be the one we describe; this particular set is designed for use with a Babcock 3-channel transmitter—which Bonner also used—so no special transmitter is needed for it.

The receiver operates on 45 V., and idling current is around 2 ma.; with either tone on, the current jumps to about 6 ma. We feel this receiver will see wide use for moderately lightweight multi-control systems this year—watch for it soon.

Giant planes are still preferred by many builders, and it must be admitted that the big ones can be made to give a very low wing loading. After having tried all sorts of combinations for top stunting ability, Harold deBolt has a 1300 sq. in. monster ready for use; it will have Schmidt reed equipment for multi-control, and weighs in at only 6 1/2 lbs. Thus, the wing loading comes out at 12 oz. per sq. foot, which Harold feels will enable him to do a real stunt pattern, without having a screaming bomb on his hands. A

Torp .35 seems to have plenty of power. We understand George Swank of Buffalo has another of the same design on the way, and will have more dope on these symmetrical-airfoil stunters, after they have been wrung out a bit more.

We'll bet many an R/Cer will try to snitch the engine from the Jim Walker "Firebee" Ukie plane! Engine is souped-up Walker version of the Royal Spitfire, and has very neat exhaust throttle built in. Throttle moves very easily and could be operated with the lightest escapement made. This engine should be a honey for "overgrown Half-A" radio planes—or boats.

Commercial Section. Word comes from Babcock Radio Engineering Inc. (Box 3097, Van Nuys, Calif.) of several new R/C developments on the way. Most of them won't be ready for a few months, but one that will probably be in your local hobby shops by the time this issue comes out is a new design of compound escapement. It will sell for \$7.95, weigh 3/4 oz., and give four functions, including rudder, elevator, and two alternate methods of motor control. The unit is said to handle a full row of knots in 1/4" rubber with only 1 1/2 V.; it has a 6 ohm coil, can also be used with 3 V. Torque rod bearings for both rudder and elevator are built right into the escapement frame, and contacts for secondary escapement are positionable. Babcock emphasizes that the other new developments referred to above will be supplementary to their present line, and will not obsolete any of the latter.

Printed circuit kits from Ace Radio Control (Box 301, Hugginsville, Mo.) save a lot of building time, assure that the final set is exactly like the engineer-

87

CANADA'S

LARGEST AND MOST COMPLETE HOBBY JOBBERS

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LET US LOOK AFTER YOUR REQUIREMENTS
FROM OUR COMPLETE STOCK OF HOBBY MERCHANDISE

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TORONTO, ONTARIO, CANADA

WORLD'S FINEST
✓ Bonner
RADIO CONTROL
DEVICES

COMPOUND ESCAPEMENT
Self-position, self-neutralizing control unit gives multiple control for 1/2 A.

STANDARD ESCAPEMENT
Self-neutralizing, precision-built. Weight 35 ounces. Low battery drain. Guaranteed.

MOTOR CONTROL UNIT
Air-bleed device for 1/2 A. speed and cut-off. (Value bracket only \$2.95)

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BONNER Specialties
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Los Angeles 66, Calif.

DARWIN DELUXE ALL METAL ADJUSTABLE CONTROL HANDLE



NOW, no more need to have 2 or 3 handles. The Darwin all-metal oil-span handle is versatile enough to fly 1/2 A, speed, sport or stunt at a span of your own selection. Easy adjusting mechanism locks secure and will not fray cable.

\$1.25 each

DARWIN MODEL AIRCRAFT COMPANY
2430 Tremmel Avenue
Ann Arbor, Michigan

Q/A

What's your question? You ask 'em and ATH's experts Advisory Board will do its best to supply the answers

Synthetic Oil in Fuel . . . I would like to know if you could give me the chemical or trade name of the synthetic oil mentioned in articles on model engine fuels.

James Hallum, Carnation, Wash.

• Synthetic oils have come into use recently in commercial fuels. This information is generally treated as a trade secret. Industrial plants use Caloria, a synthetic oil for high-temperature work, manufactured by Esso Standard Oil, New York, N. Y.

Starfire Colors . . . Could you please tell me the official colors of the F-94C Starfire, as I wish to build an authentic model of it.

Barry Fleisher, Corpus Christi, Tex.

• The official color of the Lockheed F-94C is natural aluminum with black radome on the nose and black anti-glare patch.

Stits "Playboy" . . . Please send me information on where to obtain the kit "Playboy" which Stits Aircraft is marketing, as stated in your magazine Air Progress.

Ronald Webb, Luckey, Ohio

• For information regarding the Stits "Playboy" write to Ray Stits, P.O. Box 3084, West Riverside Airport, Riverside, Calif.

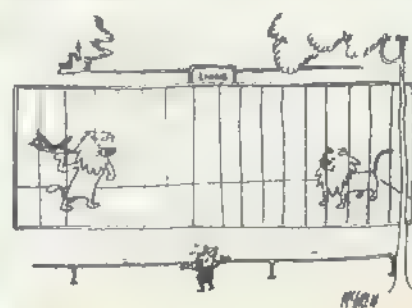
Deposits . . . About two months ago my engine, the K&B Torp Jr. #35, got dirt in it. Following the manufacturer's directions, I put it in denatured alcohol without taking it apart, except for cylinder head. I kept it in the alcohol 10 hours. Afterwards, I found a black deposit all over the engine and little pit marks in the aluminum that are hard to get off. Also it is very hard to turn over the engine.

Please tell me what this condition is and how to clean the engine inside and out. Also which way does the back plate of the Torp Jr. unscrew?

Richard Durofchalk, Binghamton, N. Y.

• The deposit and pit marks you describe on the engine must be due to impurities in the alcohol. We have never experienced this trouble and have used several brands of alcohol for washing engines. It may be possible to remove this substance by soaking for a short time in acetone or amyl acetate.

The back plate on your engine will unscrew in a counter-clockwise direction, the same as any bolt or machine screw. With the engine disassembled it should be possible to clean all parts inside and out by soaking in alcohol or one of the above-mentioned solvents. Dirt or gummy deposits can be removed by scraping with a hard wooden stick. This will not scratch the metal surface.



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case histories
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9

REARWIN GAS MODEL



58" Span. Radio or free flight. A new scale beauty. Superst features, plastic spinners, curved prop, rubber tired wheels, concealed motor, and ready cut wing ribs. Uses .14 to .25 motor.

Const. set less motor..... **\$12.50**

OTHER GAS MODELS

Vought F2G Gas Model..... **\$7.00**
48" Curtiss P40F Set..... **9.00**

REPUBLIC P47D GAS MODEL



35 1/2" span. 1/2" scale. Length 30 1/2". One-piece moulded, clear plexiglas cockpit enclosure. 2 1/2" scale alum. disk rubber wheels. Body planking full size plans. Uses B or C motor. **\$5.95**

9' TAYLOR CRAFT GAS MODEL



9 foot Span. Can use Radio control. Set has 86 ready cut wing ribs, cut plywood body formers, 16" carved prop, tail wheel unit, 2 full size plans, printed ballast, silkspan, etc. Uses "C" type motor, single, twin, or 4 cyl. motor. Set without motor or wheels postpaid..... **\$17.50**
Extra pair of 4 1/2" airwheels, \$2.50

NORTH AMERICAN B-25 GAS



67" Span. 1" Scale. Free flight or radio control. Set has two 4 1/2" alum. cowls, scale rubber tired Veeo wheels, planked type body, full size drawing, etc. Model uses two "18" or "25" motors. Const. **\$20.00**
Set, less motors.....

Curtiss 11C4 N. American B-25



32" span. 1" scale. Const. set. Rubber driven... **\$4.50** 33 1/2" span. 1 1/2" scale. Const. set. Rubber driven... **\$4.00**

Grunman-F3FI



32" span. 1" scale. Const. set. Rubber driven... **\$4.00** E/F 4-Cyl. Gas Motor Price..... **\$49.50**

BOEING PT17 GAS



45" Span. Can use 5 cyl. M5 motor 1/2" scale or B or C type motor. U control. Set has rubber wheels and all spec. parts, ready cut wing ribs, tail wheel unit and wheel. Const. set. **\$9.95**

Add 25c for postage. Catalog—10c coin

MINIATURE AIRCRAFT CORP.

83 Low Terrace, Staten Island I, N. Y.

in this event. Of course, it is possible that Proto events were not run off at each contest, which would hold down the total.

As an indication of the speeds to be expected, it can be pointed out that Proto Speed Class D which is comparable to the AMA Class C is only 127.06 mph, while their regular speed record by the same fellow, Herm Shiman, is 158.60 mph, or a difference of more than 30 mph. In A/2 the Proto record is 58.63, while their A/2 record is 87.68, again a 30 mph difference. The same 30 mph is the difference in A, while in B there is 40 mph separating the two—so don't look for any real high speeds in Proto providing the rules which the WAM have are closely followed, as should be done.

Except for Class D which has a maximum displacement of .65 and Class C (.49), all records in speed were broken during the past year.

Individually, Ron White of the Fresno Controlliners was high-point champion with 38 points. In second place was John Lenderman with 35 points. John gathered all his points in Stunt while Ron accumulated points in the 180 lap races, Proto Speed and the regular speed events. John Lenderman was high-point stunt man, Gene Durbano of the Fresno Controlliners was the man who had the most speed points, and Ray and Virginia Randall the ones who garnered the most points in the special events.

Never Say Mals. Speaking of U-control, we were recently invited to judge a Stunt contest held recently by the Buzzards of Ontario. Although they reside in a small town, they have a fairly large club and are very active. In this stunt contest more than 20 entries appeared, very few of whom were able to complete the stunt pattern, but what they lacked in skill they made up for in enthusiasm. Jim Hueble was seen to deck his ship and the pieces flew. The judges all turned in his flight card to the C.D. with "Crack-up" written on it. About two hours later, he returned with the ship patched together and proceeded (after we dug out his card again) to put in a very creditable flight which placed him fourth. In first place in the Senior event when the smoke had cleared was Earl Weiberg with 273 points, Dick Grimms was 2nd, with Eugene Leady 3rd. In the Jr. Event, Wayne Atkinson won 1st, Mary Riggle was 2nd, and Herman Robinson 3rd. A good contest put on by an active club.

Air Cars: The largest Air Car meet held to date found speeds jumping up almost 14 mph. The last meet of the AVA-Toros saw four circles in operation, two for officials and two for practice. It also marked the first time that the McCoy "Nike" and the new diesels competed. There is no need to say any more than that the diesels walked away with all prizes and practically all the places.

Dick McCoy was top man with 64.51 mph, with son Harold 2nd and 63.60 mph. The closest anyone got to 1st place with something other than a "Niki" was Mark Tackett with his "Terrier" with 60.40 mph. All the "Nikis" had been modified slightly, lowering so close that the 4 1/2/6 Power Prop just sailed the ground. This is done by spreading the front wheels. Some guys went to the trouble of installing ball bearings in their wheels to good advantage.

In all there were 27 entries, divided into Beginner and Advanced classes. The next meet will see an expert class added. Two inertia starters made their appearance and were in constant use although a lot of die-hards insisted on starting their diesels by hand. This new model

diesel by McCoy really has it; some are being put in speed models at present, and we are very curious to see the speeds which will be obtained. These engines are easier starting and have a lot more power than the previous model.

The AVA-Toros have contests lined up through April 24, when an Olympic event for Nordic, Wakefield, and FAI gas will be held in Chino.

Aeroneers Competition. At San Diego, the Aeroneers Holiday meet was disappointing in the number of entries; less than 30 took part in the contest. Dick (Mr. Bulova) Sladek put in winning efforts to win both PAA-Load events—don't know what he does with all of them but we bet that George Gardner could obtain enough watches from Dick to run most any contest.

In A/2 free flight Bob Petro posted 13:43 for first place, R. C. Williamson 13:23 for 2nd, and Tom Henebry 13:10 for 3rd. In ABC combined Mark Tackett of Chino posted his first California win, doing 14:38 for 1st. Frank Newquist posted 14:21 for 2nd while AF man Nat Antonoli put his Kiwi up for 13:47 and 3rd. Nat is stationed at Tucson and was home on holiday leave.

Some other highlights were Walt Mooney's 23" "Lieton Minor" Bambi-powered which flew all day long, George Wagner's ancient Arden-powered PAA-Load which he flew to 2nd place, and Fudo Takagi with his aluminum foil covered fuselage.

DICK EVERETT

SOUTHERN SCENES

Our King Orange Experiences. At this writing, we've just returned from the 1st King Orange Internationals. Host for the event was the U.S. Marine Corp. Accommodations for all contestants were made available at very reasonable prices, as well as meals. Registration was held the afternoon and night before the first day's event for any flyers who had not previously been signed in.

The Cuban Government sent a fine delegation up for the meet. A few control line boys, but mostly free-flight. Dale Kirn, now out of the Air Force, journeyed down with his brother from Salina, Kan. Contestants from all over the eastern U.S. were on hand to compete for the long list of prizes and awards.

Each day's flying was divided into two periods: 8 a.m. to 12:30 p.m. and 12:30 p.m. to 5:00 p.m. Certain events were flown during each period—Class C speed and junior stunt during the first. Although many good C ships were on hand, no one seemed able to get any good speeds. Dale Kirn turned in the best time with his Monoline C job with 148 mph. All C speeds were slow, in fact only three or four fellows topped 140 mph. The writer's ship, which has consistently been turning better than 155 mph, couldn't break 140. Lamar Parker, of Macon, Ga., another better than 150 mph man, was also under 140 mph.

After a very discouraging morning, B speed was due to be flown that afternoon along with open stunt. We all felt we might be in a rut and hoped our B ships would prove us wrong. Dale Kirn again started the ball rolling by turning a swift 133.49 mph. Lamar Parker got in a good time of 131 mph. The writer put in a couple of good flights that took first in this event. My times were 134 and 136.21 mph.

The next morning Dale put in the first
(Continued on page 92)

Air Trails HOBBIES For Young Men

HOBBIES' SHOWCASE®

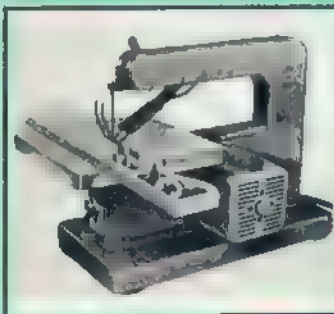
King size one-gallon cans of Midwest's glow fuel now available. Shown here is the one-pint can; the gallon container has a handle, but same label design. Nitro-X contains nitrated alcohol and "AA" castor oil for sport and contest flying. Prices are \$5 for 1 gallon; \$1.50 for 1 quart; 85¢ for 1 pint. Nitro "XX" for Half-A engines sells for 45¢ per half pint.

Midwest Products Co., 8005 E. Dunlap Hwy., Gary, Ind.



New jigsaw with built-in rotary motor is made by Dremel Mfg. Co., manufacturers of the Moto-Tool line of power tools. Called Model #8 Moto-Jig Saw, the \$23.50 tool incorporates "rocker action" which eliminates blade "buckle" and "whip," saving blades. Positive power is applied to both up and down stroke. Will saw 1½" wood and ¾" plywood.

Dremel Mfg. Co., 2420 18th St., Racine, Wisc.



Cadet bicycle speedometer by Stewart-Warner registers up to 50 mph and has an odometer which goes to 10,000 miles. Model 753-D consists of speedometer, drive assembly, mounting bracket, washers, etc., for complete installation. Can be mounted on 24" and 26" balloon-tire or lightweight bikes. Attaches to steering post. Blue dial, red pointer.

Stewart-Warner Corp., 1840 Silverway Pk., Chicago 34



McEntee's latest effort in the book field is this Radio Control Handbook published by Gernsback and selling for \$2.25. This is No. 53 in the Gernsback library. Includes material on complex control systems, motor and auxiliary controls, single and multi-tube receivers, simple and complex transmitters, adjustments, test instruments and systems.

Gernsback Publications, 28 W. Broadway, NYC 7



Low-cost home workshop vise capable of solving any workholding problem in the home, garage or shop and modeled after the AMF line of Float-Lock safety vises for industry has been introduced by American Machine & Foundry Co. The flexibility of the new Mity #7 vise is said to eliminate the need for at least a half-dozen specialized tools. \$9.98.

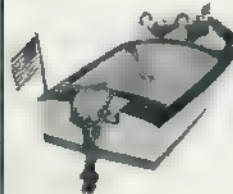
Float-Lock Corp., 261 Madison Ave., NYC 16.



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Chris-Craft's 18' Outboard



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Nine new outboard construction kits now available at all dealers. All an inch to the foot scale or larger. Actual large boat construction, framed hulls planked. Each kit complete with cement, decals, metal fittings, blade, sandpaper etc. Chris-Craft's 21' Montezuma Cabin Express Cruiser at \$3.95. Chris-Craft's 17' Speed Boat at \$3.95. Chris-Craft's 18 foot Express, 18" long at \$3.95. Chris-Craft's 14' Hornet runabout, 17½" model at \$3.95. The new 18" "APACHE" conventional step hydroplane at \$2.95. Chris-Craft's 28' Cruiser, 25' Express, 21' Sportsman, 21' Express now show outboard motor installation as well as inboard. WRITE for literature on 18 boat construction kits—\$2.95 to \$9.75, sixteen-inch to thirty-five-inch models

DUMAS PRODUCTS

2114 S. Alvernon, Box 8886, Tucson, Arizona
World's largest manufacturer of power boat kits—1954

VEST POCKET RADIO

Smaller than many hearing aids. Powerful, portable and can be assembled by anyone in one hour. Uses two inexpensive cells that fit within case. Owners report 1,500 mile reception. No antenna or ground required for local use. Complete kit of hearing-aid parts only \$2.99. Batteries extra at \$1.15. Use any regular headphone with Micro or tiny hearing-aid earset, shown in photo \$3.90. Micro is guaranteed to please or return in 10 days for full refund.



\$2.99 POST-PAID

Send Only \$1.00 Bal. C.O.D.

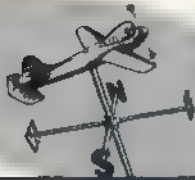
Electronic Miniatures (AT) Mantua, No. Car.



Jim Walker "FIREBEE" NEW! Remote Control Throttle

provides a self-learning plane you can take off and land at will—a plane you can fly slowly, quietly, without dizziness. You can shoot landings with the "Firebee," hover in mid-air, land and taxi in, refuel with the engine running, take off again! COMPLETE KIT INCLUDES fuel tank with "anti-stall" reservoir and filter, smooth-finished parts, U-Control handle, flying lines, prop, canopy, landing gear, wheels, hardware, decals, flying course, Jim Walker "Firecracker" Engine with \$14.95 New "Power and Silencer Control."

JIM WALKER A-J AIRCRAFT CO.
1146 N. E. 33rd Ave.,—Portland 12, Ore.



Hobby Shop Directory

Model Builders! Here's a listing of the nation's leading hobby shops. You'll want to file it away—and when you're in the neighborhood, drop in and browse around. They're expecting you.

CALIFORNIA—CULVER CITY

New Location, Larger stock. Offstreet Parking. Same friendly service since 1935.

Open Weekdays 10-6
Mon. & Fri. Even. 7-9

PICO MODEL & HOBBY SHOP
5407 Sepulveda Blvd. EX 8-9913

NEW JERSEY—PARSIIPPANY

The Town of All Hobbies—
80 mins. from N. Y.

Open 7 days—All day Sat., Sun.
Flying fields available
Buy 'em—where you fly 'em.

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Route 46 Boonton 8-2666

NEW YORK—BROOKLYN

HEADQUARTERS!

Everything for model airplane builders.
Accessories our specialty.
Engines, parts and service.
Complete U-Boat Service.
Everything Advertised in Air Trails
HOBBIES For Young Men

PARK HOBBY CENTER
8120 Seventh Ave. Shore Rd. 5-2972

NEW YORK

BROOKLYN

Labor-free silk covering for models purchased here. Authorized ESSCO R/C dealer in this vicinity.

MERMAID HOBBY CENTER
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NEW YORK—BRONX—WEST-CHESTER

Specializing in R/C for Hobbies
AUTHORIZED DEALER FOR
ESSCO R/C PRODUCTS
IN THIS VICINITY

W. H. ELECTRONICS—MODELS
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NEW YORK—BRONX—WEST-CHESTER

R/C SPECIALISTS—
LARGEST STOCK OF
R/C EQUIPMENT ANYWHERE
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AUTHORIZED ESSCO DEALER

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Opposite the Van Cortlandt
Park Mansion
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NEW YORK—FLUSHING—JAMAICA

The most extensive stock of planes, engines and R/C equipment on Long Island
Your problems are always welcome
Buy Where the Experts Buy.

SKIP'S ISLAND HOBBY SHOP
177-07 Union Turnpike JA 6-7562

NEW YORK—JAMAICA (3)

HOBBIES—THAT'S ALL!
HOURS: 10 a.m. to 8 p.m. daily
Mon. & Fri. 10 to 10 p.m.
Saturday 9 a.m. to 8 p.m.

JAMCO (Jamaica Co.) Hobbies, Inc.
179-29 Hillside Ave. JA 3-9140

NEW YORK—LEVITTOWN & HICKSVILLE

Model Airplanes, Radio Control, Boats, Trains, Art Supplies Complete Stock
For beginner and expert alike.

PAUL PLECAN'S HOBBY SHOP
West Village Green LE 3-7379

NEW YORK—FLUSHING—LONG ISLAND

Specialists in R/C For Hobbies
We Carry the Largest Stock of Radio Control Specialties on Long Island

L. I. ESSCO R/C PRODUCTS
138-18A Northern Blvd. IN 3-2684

(Continued from page 90)

A flight of the day. He could have gone home right then with the time he had, 138 mph. Just to prove he wasn't kidding, his second official was 137 mph. Wow! Dale says his engine is just a stock Torp .19. After this the rest of us just played around trying to get in an official flight. Parker took third with 119.63, and the writer took second with 119.79.

That afternoon all A/2 speed was flown. Also everyone with team racers were qualified. And all scale models were judged in order that they might be flown the next day. The following day brought jet speed when Dale Kim broke his old record with a speed of 159 mph. Also on the docket was a team race of 21 and 35 lap races. After lunch Navy Carrier was flown along with a 70 lap and a final 140 lap feature race, over in the team race circles.

During the three days all classes of free-flight and radio control events were held in large areas adjoining the control line runway. The special sub-junior event for contestants age 13 and under was a

good event for any meet, large or small. The top 20 winners were given awards. This setup makes it easy for a youngster to win an award, letting him feel he has accomplished something, which gives him a greater incentive to enter another meet. This event called for hand-launched gliders of any kind.

The "Old Master of U/C," Jim Walker, came down from Portland (Oregon) and flew some exhibition flights with his famous "Sabre Dance" Fireball. Jim also did some long line flying with his new profile stunt ship. But the thing that caught everyone's eyes was his new "Fire Bee" which is a real cutie. It is an A/2 ship with a throttle control which provides for taxiing, taking off, and shooting landings.

Rare Race. The Atlanta Team Race Club was host to many of the Atlanta Modelers when they staged a team race for the Ga. Congress of Model Plane Clubs. It turned out to be a pretty day for flying.

Anyone could enter this meet with no restrictions as to the type of ship or the size of tank to be used. Any type of plane

could be used including profile and stunt. The only requirements were that the ship must have a minimum effective wing area of 125 sq. in. The plane must have stationary landing gear and withstand a 15-pound pull test. All planes were flown on 60 ft. lines.

Each contestant flew in a fifty-lap heat race. Lots were drawn for their positions. Points were awarded in each heat to all four flyers. The next heat race was a 100-lap race in which lots were also drawn for positions and points awarded all flyers. In this race each contestant was required to make at least one pit stop. At this point it was determined who was to compete in the consolation and feature. The first four went to the feature, the second to the consolation. The consolation race was a 100-lap race and the feature 150 laps.

First and second places were awarded in the consolation and feature races. Members of the Atlanta Team Race Club were permitted to compete but were not allowed to fly team racers.

—R. W. ELLIOTT, JR.



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Nolan Miller, 1443 Hamlet Ave., East Meadow, N.Y.



Portable camp stove utilizing a disposable liquefied petroleum fuel tank is being marketed by the Turner Brass Works. Its light weight (6 lbs.), compactness and economy of operation make it ideal for camping, fishing, hunting, picnics, model meets and as a "stand-by" emergency stove for the home. No smoke or fumes; no priming, pumping or warm-up.

Turner Brass Works, Bensenville, Ill.



Nothing else like it anywhere is the very complete "Ships and Aircraft of the U.S. Fleet" by Jim Fahey. With addenda which includes Korean War data, the new sixth edition sells for \$2 and has \$1,000,000 worth of information. Companion book on Army and Air Force aircraft sells for \$1.25. No serious collector or true air fan would be without these.

Ships & Aircraft, 2023 R.I. Ave., N.E., Washington 18, D.C.



For young air fans not ready for Fahey's works, we recommend the National Aviation Education Council's booklet, "Jets." Designed for classroom as well as individual use, this 32-pg. affair sells for 50¢ singly; 45¢ in 25- to 99-copy lots; 35¢ for 100 or more. Tells why, where and how jet aircraft fly through simple text and illustrations.

N.A.E.C., 1218 17th St., N.W., Washington 6, D.C.



Here is one of Schmidt Radio Controls' new servo designs. Concern has various types for elevator, rudder or engine use. Nylon gears are utilized for fast action and non-jamming features. Data on these and others will be found in the new Air Trails Model Annual for 1955 under specification charts with "Radio Control Equipment—Helpful Data on Devices."

Schmidt Radio Controls, 380 E. 53rd St., Erie, Pa.



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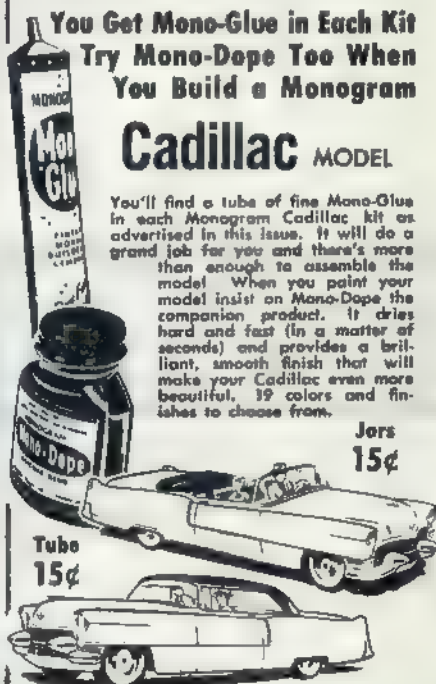
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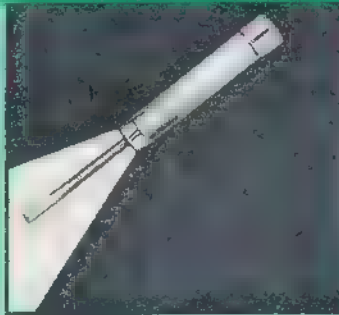
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Screwdriver with built-in flashlight is one way of putting light on the subject. A bit more than 6 inches long, this sturdy steel instrument must have been thought up by some ex-modeler or at least someone who took pity on modelers. Comes with standard battery and bulb. \$1 post-paid. Now if it will just help us locate that bolt we dropped here somewhere—

Treasure Mart, 1407 Maple Ave., Milliside, N.J.



Scaled 1/25th actual size is this Chevrolet Corvette plastic assembly set by Product Miniature Co. Steel chassis has spin-torque motor; other items are windshield insert, wheels with vinyl tires, axles, screws, paints, brush and instructions. 6 7/8 x 3 x 2 1/2 in. Concern's Trailways Thru-Liner bus (18 x 3 3/4 x 5") might have R/C possibilities.

Product Miniature Co., 2240 S. 84th St., Milwaukee 14



Hang it on the wall or display it on your desk, Revell's new actual-size 1776 Flintlock Duelling Pistol comes with versatile stand and identifying scroll. In plastic assembly set for 98¢. Also available in plastic by same outfit is an 1869 .45 calibre Pepperbox with six barrels. Realistic walnut grips, silver frames and blue steel barrels have realistic color.

Revell, Venice, Calif.



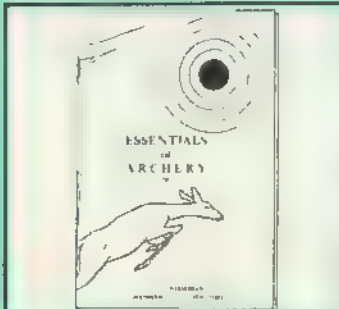
New edition of radically different Anscoflex camera comes from Ansco. Anscoflex II offers the photographer two added conveniences: a built-in close-up lens and a built-in yellow filter for cloud effects and more pleasing picture contrast. Both these items are just what the model photog needs—near 'n' far perfection. \$17.95. Flash unit is \$4.95.

Ansco, Binghamton, N.Y.



The biggest buy in any such booklet we have ever encountered is "Essentials of Archery" which can be obtained from L. E. Stemmler for just 75¢. After you've gone through this 84-page compilation you'll be all set to go out and get yourself a bear—just as one photo shows. If you have any ideas at all about archery don't miss this wonderful book.

L. E. Stemmler, Manassas, L.I., N.Y.



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Hobby Club Emblems



The above emblem of Bucks County Federation of Model Airplane Clubs, Bristol, Pa., replaces the one which appeared in our May 1954 issue. The Federation was first organized in 1947 and consists of five clubs with a combined membership of more than 140 which includes about 10 independent members. It is noted for its annual open Team Racing events, also promotes all types of other model flying events exclusively for member clubs which run all year long and are based on point system. Contact man: Albert E. Abrams, Jr., 1031 Pond St., Bristol, Pa.



Bristol Aeromodelers, Bristol, Pa., was organized in 1947 by four model builders. The same year it acquired an AMA charter. Sponsored by the Bristol, Pa., Exchange Club, it has 38 active members at the present time. Main interest is in model planes and boats. Club is also member of the International Model Power Boat Association. It is known for running unusual contests such as low-ceiling indoor paper-covered model events and the annual Hydro-meet. One of the contests this year will have model Navy Carrier.



Dalles Cloud Cutters of Dalles, Texas, is a fairly recent club, organized on November 1, 1953. Hearing of its activity in teaching model building and flying to beginners, the Aviation Committee of the Dalles Exchange Club offered to sponsor the club. It has made funds available to the "Cutters" for material to build work benches, acquire tools, print letterheads, membership cards, and donated 10 engines and kits. Present membership consists of 50, is still growing by leaps and bounds. Meetings are held every other Friday at Hobbyland. Contact: E. R. "Dick" Atkins, Jr., 1701 Grace St., Dalles.

Send your club insignia—with info on your group. ATH will pay \$10 for each emblem and report used here. Type data and send only printed emblems—no sketches.

CLASSIFIED ADVERTISING

Everyone reads the classified. Here is a section hand-tailored for anyone with something to buy or sell.

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MODEL BUILDING CLUBS

RACE CARS—American Miniature Racing Car Association. For membership information send 10c to Carl Noward, 1384 Berdan Avenue, Toledo 12, Ohio.

POWERED BOATING—International Model Power Boat Association. Mrs. Margaret Baxmann, 2991 Garland Avenue, Detroit 14, Michigan. Send 10c for membership data.

AEROMODELING—In U.S. official governing body is the Academy of Model Aeronautics. 1025 Conn. Ave. N.W., Washington 6, D.C. Send 10c for information on joining.

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While every precaution is taken to insure accuracy we cannot guarantee against the possibility of an occasional change or omission in the preparation of this April 1955 index.

What's Your Hobby?®



BIRD CARVING

.... says David Voigt of Conover, N. C. "It became my favorite hobby when our school put on a science show last year. My biology teacher found out that I was handy with wood working tools and asked me to carve some birds. This turned out to be a profitable hobby as many of the people visiting the show wanted birds for themselves. I now have a complete set of carving tools. Among the birds I carve are the pheasant, mallard duck, cardinal, black-capped chickadee and six others."



STAR GAZING

.... says Nicholas Kepcher of Passaic, N. J. "My interest in legends and folk lore about the sun, moon and planets led me to follow astronomy as my hobby. I started when I was 10 years old and recommend it to other young folks from 10 to 110. To date I have built one six-foot-long refractor telescope and purchased a ready-made 3½ inch reflector job. With these two scopes I have seen every planet except Pluto. I hope to use my knowledge as my life work, if I cannot be a test pilot."

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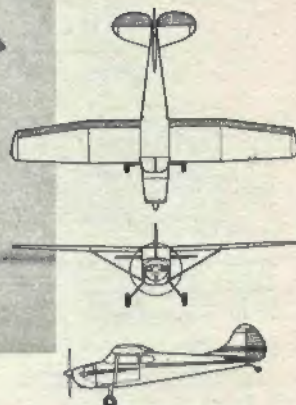
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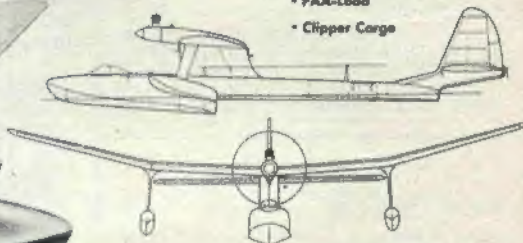
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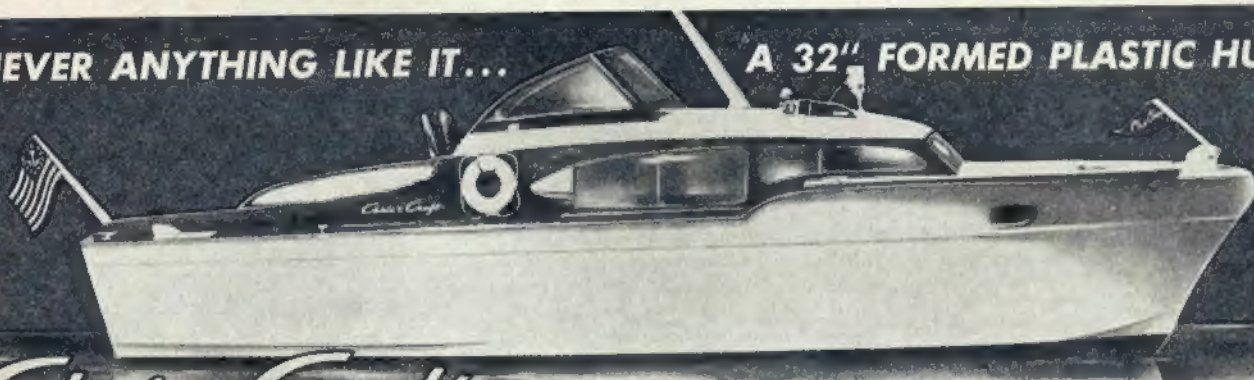
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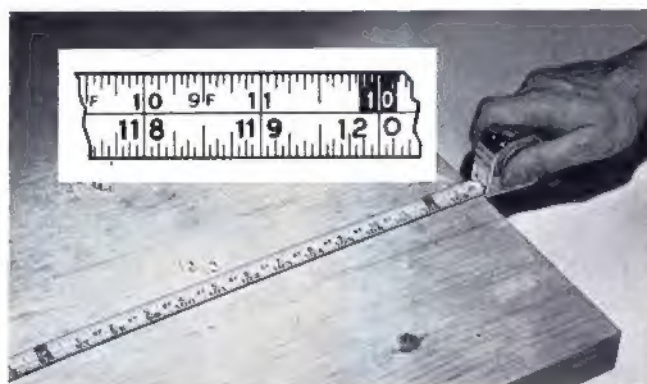
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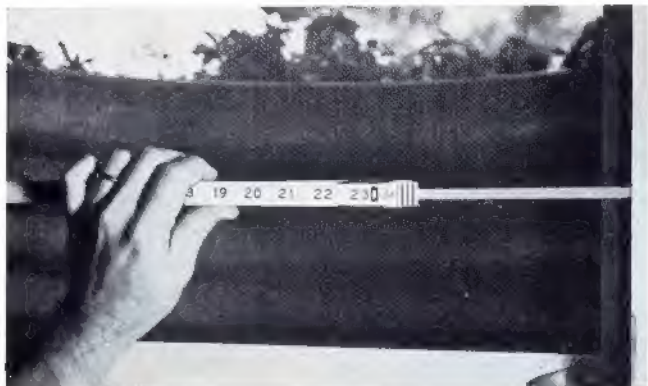
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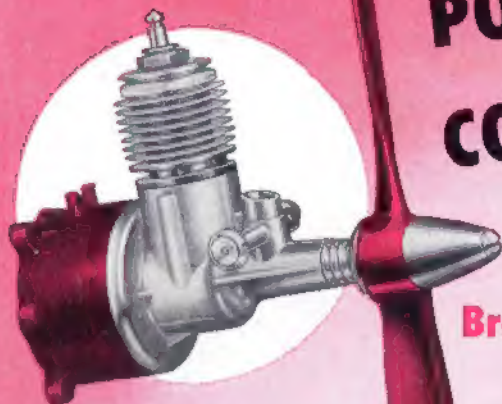
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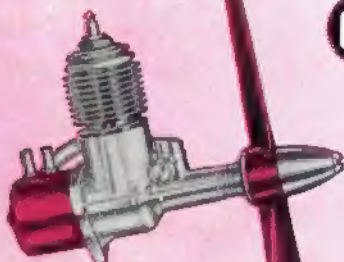
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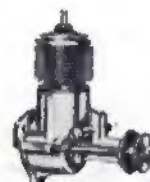
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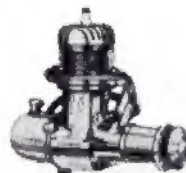
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